



ISCC Carbon Footprint Certification

Version 0.1



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1 Introduction

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

*Paris Agreement
and long-term
strategies*

Based on 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. Part of this process for these companies is the determination and calculation of the relevant GHG emissions. Initiatives like the Science Based Targets Initiative (SBTi)¹, define and promote best practice in science-based target setting and are supporting companies on this. Thus, the reporting of carbon footprints for individual production steps, products, value chains and entire companies has become increasingly important in recent years. The reporting of such data for companies is requested by many stakeholders, e.g. regulators, financial institutions, customers, NGOs, to receive measurable and comparable information on relevant emissions. Carbon Footprints for products is a key indicator for environmentally friendly products and for many customers an important indicator for the comparability of products. In addition, brand owners are asking their suppliers for detailed information on carbon emissions for their products, aiming to minimize the overall carbon emission of final products and their supply chain.

*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 document describes the main guidelines for the “ISCC Carbon Footprint Certification” which can be used by system users to determine GHG emissions for different processes, feedstocks and products. Innovative technological options to reduce GHG emissions like carbon capture and storage are described and it will be explained how to determine the relevant emissions and to make credible claims of the certified products.

The ISCC Carbon Footprint Certification can be used with ISCC PLUS certified materials and products based on non-conventional feedstocks, but also independent of ISCC PLUS certified material and sites. This could also include supply chains without non-conventional feedstock (e.g. fossil-based), for which GHG emission reductions e.g., against a comparator can be claimed. The ISCC Carbon Footprint Certification will be further developed by ISCC and its stakeholders. It is foreseen that the module will in future integrate additional processes and methodologies to determine GHG emission

¹ SBT: <https://sciencebasedtargets.org>

reductions supporting the decarbonization of industries. To add certification approaches under the ISCC Carbon Footprint Certification they must include processes, materials, and products aiming to reduce GHG emissions.

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 (e.g., ISO 14067, Together for sustainability PCF guideline). 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 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. 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 ISCC EU 205 – Greenhouse Gas Emissions. When non-conventional feedstock is used, the ISCC Carbon Footprint Certification can be combined with an ISCC PLUS certification and the respective ISCC PLUS system documents apply.

3 Certification approaches

Currently the following certification approaches for product PCFs are available under the ISCC Carbon Footprint Certification:

- PCFs of products including Carbon Capture and Storage within the supply chain

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.

3.1 PCFs of products including Carbon Capture and Storage in the supply chain

3.1.1 Introduction

Carbon dioxide (CO₂) capture and storage (CCS) is the permanent storage of CO₂ in a geological site. This emission reduction process is designed to prevent large amounts of CO₂ from being released into the atmosphere. Permanent CO₂ storing can take place in natural underground reservoirs utilizing natural geological barriers to isolate the CO₂ from the atmosphere.²

The whole process can be divided into three major steps:

- 1) Capture: Separation of CO₂ from other gases and compression of the gas for transport purposes
- 2) Transport: Compressed CO₂ (“dense phase”, liquid-like state) can be transported to a suitable site for geological storage e.g., via pipelines, ship or truck
- 3) Injection and storage: Transported CO₂ is injected into deep, underground rock formation.

Three process steps

CCS is an option in the portfolio of actions that could be used to reduce greenhouse gas (GHG) emissions from the continued use of fossil fuels.³ Under the ISCC Carbon Footprint Certification module, companies can get certified for the service of permanently storing CO₂. This service of storing CO₂ generates “CO_{2eq} savings” in the amount of the net quantity of CO₂ being stored. The net amount is the total amount of CO₂ being stored minus the emission (CO_{2eq}) occurring for the capturing, transport, injection, and the permanent storage of the CO₂ in the geological site (CCS unit). The CO_{2eq} savings being generated can be used for claims on reduced carbon emissions for fossil-based products and processes.

Under the ISCC Carbon Footprint Certification module, companies can consider using CCS to minimize carbon emissions of fossil-based products and to supply a more environmentally friendly product. The reduction of the CO₂ emissions for processing shall be applied to the CO₂ footprint of such a product.

This chapter provides guidelines for the certification of CCS under the ISCC Carbon Footprint Certification module and the accounting of CO_{2eq} savings

Applicability

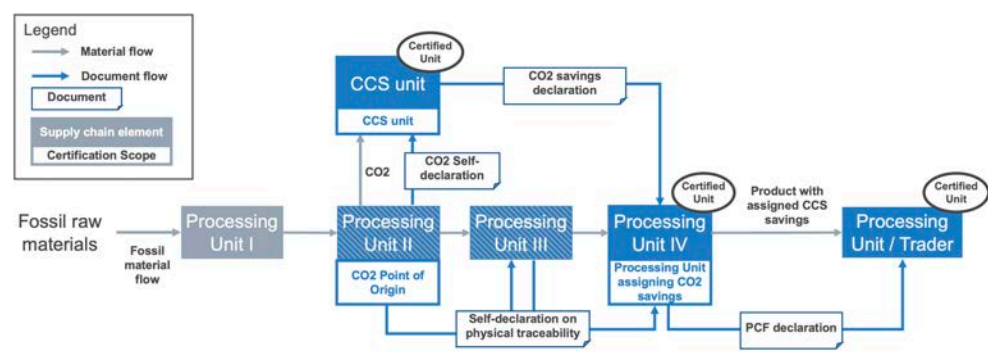
² IPCC Guidelines for National Greenhouse Gas Inventories (2006): Chapter 5 – Carbon Dioxide Transport, Injection and Geological Storage.

³ IPCC 2006.

being generated for the permanent storage of CO₂. The approach can be applied combined with ISCC PLUS for all certified batches of material, intermediates and products with non-conventional feedstock under ISCC PLUS. The requirements apply to all elements of the supply chain covering the three major steps for CCS: the processing unit from which the CO₂ is captured, the transport of the captured CO₂ to the storage facility and the storage facility (CCS unit) itself. Further, this document also applies for downstream elements in the supply chain (e.g., processing units, traders) as guidelines for claiming CO_{2eq} savings as well as for the avoidance of potential “double-claiming” of CO_{2eq} savings and carbon credits, e.g. under regulatory emission reduction schemes and ISCC simultaneously.

3.1.2 Certification approach for CCS supply chains

In the following the certification approach for CCS supply chains (including the respective certification requirements for the different elements of the supply chain) is described based on an exemplary supply chain including CCS (see figure 1).



Certification concept for CCS supply chains

Figure 1: Example supply chain with a CCS unit in the chemical industry

CO₂ capturing and physical delivery to CCS unit

The CO₂ is captured at a processing unit (see figure 1: processing unit II) in the supply chain processing fossil-based raw materials and products. The CO₂ is a waste stream and without capturing the CO₂ would have been emitted to the atmosphere (direct emissions of processing unit II).⁴ In this case, processing unit II is the point of origin (PoO) for CO₂. The upstream supply chain, including the extraction and the mining of the fossil resources (natural gas, oil) and previous processing steps cannot be covered under ISCC. The captured CO₂ must be quantified and transported (e.g., via pipelines, ship, or truck) to the CCS unit. A contract must be in place for the supply of the CO₂ from the processing unit to the CCS unit and a respective CO₂ self-declaration must be issued.

Point of origin is the processing unit capturing the CO₂

CO₂ storage at CCS unit

⁴ In this example the CO₂ is of fossil (post-industrial) origin captured from industrial processes, which use fossil sources to deliberately produce electricity, heat, or materials (e.g., cement, iron and steel, petrochemical industry). The CO₂ can also be of biogenic origin, when resulting from processing biomass at processing unit II.

The CCS unit must be certified under ISCC for the service of storing CO₂ permanently (certification scope “CCS unit”). The processing unit capturing the CO₂ is a PoO covered by the certificate of this certified CCS unit. The storage of CO₂ generates a quantity of “CO_{2eq} savings” in the amount of the stored CO₂ minus the amount of CO_{2eq} emissions occurring for the capture, transport, and permanent storage of the CO₂.

Processing unit assigning the CO₂ savings

The CO_{2eq} savings can be issued to the processing unit from which the CO₂ has been captured or to downstream processing units physically linked to the supply chain.

The processing unit, to which the CO_{2eq} savings are issued, need to be certified under ISCC (certification scope “processing unit assigning CO_{2eq} savings”, processing unit IV in figure 1), and can use the CO_{2eq} savings to make a claim for a respective amount of outgoing product. The CO_{2eq} savings can be assigned to one or several of the outputs of the processing unit. The respective processing unit must receive a documentation on the amount of CO₂ fixation in the CCS unit and issued to the respective processing unit (“CO₂ savings declaration”). The CO_{2eq} savings can only be issued to processing units physically linked to the processing unit capturing the CO₂. Physical link means that there must be a physical flow of intermediate materials between the PoO of CO₂ and the processing unit the CO_{2eq} savings are issued to (as depicted in figure 1) and that the products, to which the CO_{2eq} savings are assigned to, can be produced via this intermediate material flow (chemical / technical feasibility). The physical link via this intermediate material flow is documented on “Self-declarations on physical traceability”.

*Physical link
between CCS
unit and
processing unit
assigning CO_{2eq}
savings required*

If for the handling of product batches with assigned CO_{2eq} savings the same infrastructure is used as for batches of the same type of product without assigned CO_{2eq} savings, system users must comply with ISCC PLUS/ ISCC EU requirements for mass balancing (Chain of Custody option Mass Balance). In comparison to the mass balancing requirements laid down in the ISCC PLUS system document, it is not allowed to conduct a multi-site-credit transfer for materials with assigned CO_{2eq} savings to ensure the required physical link between the CCS unit and the products with assigned CO_{2eq} savings (see description of physical link above, which is a crucial requirement for certification of CCS supply chains under ISCC).

Downstream handling of products with assigned CO₂ savings

The processing unit assigning the CO_{2eq} savings issues Product Carbon Footprint (PCF) declarations for the products with assigned CO_{2eq} savings under the ISCC Carbon Footprint Certification module. It is not allowed to issue ISCC PLUS sustainability declarations for fossil materials with assigned CO_{2eq} savings. Downstream entities not certified under the ISCC Carbon Footprint Certification module are not allowed to make claims related to PCFs reduced via CO_{2eq} savings under ISCC or issue ISCC Carbon Footprint

Certification PCF declarations.⁵ The PCF of products with assigned CO_{2eq} savings can be considered at downstream ISCC PLUS certified entities, if the ISCC PLUS GHG add-on is applied. ISCC PLUS certified downstream entities must clearly separate fossil material with assigned CO_{2eq} savings as an input material from input materials with non-conventional feedstocks under ISCC PLUS.

3.1.3 Methodology for the calculation of net CO_{2eq} savings

The methodology for the calculation of net CO_{2eq} savings must take the IPCC guidelines into account⁶. All process steps for CCS (capturing, transport, injection, and storage) must be considered for calculating the net CO_{2eq} savings. For all three steps, leakages and uncontrolled CO₂ fluxes must be monitored, measured, and taken into account to determine the net CO_{2eq} storage. The following equation describes how to determine the amount of CO_{2eq} savings:

IPCC guidelines

$\Sigma CO_{2eq} \text{ savings}$

$$\begin{aligned} &= \Sigma CO_2 \text{ stored (C1)} - \Sigma CO_{2eq} \text{ emissions for capturing (C2)} \\ &- \Sigma CO_{2eq} \text{ emissions for CO}_2 \text{ transport (C3)} \\ &- \Sigma CO_{2eq} \text{ emissions for injection and storage (C4)} \end{aligned}$$

The processing unit from which the CO₂ is captured must calculate and provide data for CO_{2eq} emissions for capturing. The CCS unit must calculate and provide data for CO_{2eq} emissions for transport, injection, and storage as well as the amount of CO₂ stored. The operator of the CCS unit must provide data on annual CO₂ storage, leakages and any CO₂ fluxes through the seabed or ground surface.

3.1.4. Generation and utilization of net CO_{2eq} emission savings

The net CO_{2eq} savings can be transferred from the CCS unit to the processing unit from which the CO₂ was captured, or to other downstream processing units physically linked to the supply chain (see description in chapter 3). Only CO₂, which is captured within the supply chain of the product the savings are assigned to and transported to the CCS unit can generate CO_{2eq} savings for the assignment to the respective product. The CO_{2eq} savings cannot be transferred, sold, or assigned to other supply chains under ISCC.

To evaluate the impact of the CO_{2eq} savings, a cradle-to-gate product carbon footprint (PCF) baseline calculation for the product(s) the CO_{2eq} savings are assigned to must be provided. The PCF baseline calculation shows the PCF without consideration of any CO_{2eq} savings and must be site-specific from the

*Site-specific
PCF baseline
calculation
required*

⁵ This also holds for downstream entities not being able to get certified under the ISCC Carbon Footprint Certification module, since they fall not under the defined scope and system boundaries of the certification approach.

⁶ IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 5: Carbon Dioxide Transport, Injection and Geological Storage.

PoO of the CO₂ until the downstream processing unit producing the respective product (usage of primary data within this system boundaries). Therefore, site-specific PCF calculation of the intermediate products between the CO₂ PoO and the processing unit assigning the CO_{2eq} savings (see mandatory information in document “Self-declaration on physical traceability”) must be available at the processing unit assigning the CO_{2eq} savings.⁷ This is needed be able to verify the site-specific baseline PCF calculation of the products the CO_{2eq} savings are assigned to. The PCF baseline calculation is verified during the ISCC certification process and can be used during the validity period of the certificate (one year). An update of the baseline PCF calculation is needed after one year for the recertification process.

The site-specific PCF baseline calculation between the CO₂ PoO and the processing unit assigning the CO_{2eq} savings together with the net CO_{2eq} savings stored via the physically connected CCS unit represent the emission inventory of the considered CCS supply chain within the system boundaries. Under the certification approach for CCS supply chains of ISCC the CO_{2eq} savings can be assigned to specific products of the considered CCS supply chain within this system boundaries. The total sum of the calculated PCFs needs to be equal to the emission inventory of the supply chain within the system boundaries and products without assigned CO_{2eq} savings need to show the baseline PCF result.

If the CO_{2eq} savings are only used to reduce the processing emissions of the processing unit capturing the CO₂, the CO_{2eq} savings are assigned to the products of the processing unit capturing the CO₂ following common allocation principles for emission or emission savings of PCF norms (e.g. ISO 14067). This assignment of the CO_{2eq} savings gives the CCS reduced PCFs of the products of the processing unit capturing the CO₂.

If, for example, “carbon neutral” claims of downstream products of the supply chain should be made, the PCF baseline calculation is used to calculate the amount of CO_{2eq} savings needed for the carbon neutral claim of the product.⁸ In such a case the assignment is used to compensate feedstock emissions and processing emissions of other processing units of the supply chain including emissions for the extraction and mining of fossil resources, transport, and processing (upstream supply chain). This assignment to products of processing units downstream the CO₂ PoO does not necessarily need to follow common allocation principles for emission or emission savings of PCF norms (e.g. ISO 14067). Information on the assignment mechanism used must be transparently available for the downstream supply chain, e.g., by giving information on the compensated upstream emissions and the

*“Carbon neutral”
claims*

⁷ Alternatively at the processing unit assigning the CO_{2eq} savings the operational data of the processing units between the CO₂ PoO and the processing unit assigning the CO_{2eq} savings needs to be available.

⁸ The baseline PCF verified during the certification process can be used during the validity period of the certificate to calculate the CO_{2eq} savings for carbon neutral claims if no major changes with a significant influence on the baseline PCF occurred.

disclosure of the baseline PCF together with the “carbon neutral” claim on the PCF declaration. The products, for which carbon neutral claims should be made, must be listed on the Annex of the certificate of the respective processing unit and a respective site-specific PCF baseline calculation must be in place.

In all cases the balance of net CO_{2eq} savings stored, and CO_{2eq} savings assigned must be closed, meaning that the sum of assigned CO_{2eq} savings cannot exceed the amount of net CO_{2eq} savings stored (see calculation of net CO_{2eq} savings stored in chapter 4) within a balancing period⁹. Therefore, all certified entities need to conduct an individual balance of CO_{2eq} savings (e.g., the CCS unit needs to conduct a balance of net CO_{2eq} savings stored and issued to the processing unit(s) assigning the CO_{2eq} savings and a processing unit assigning CO_{2eq} savings need to conduct a balance of CO_{2eq} savings received from the CCS unit and assigned to its product(s)). The CCS unit needs to hold a valid ISCC certificate to generate CO_{2eq} savings under ISCC (CO₂ stored prior to ISCC certification cannot generate CO_{2eq} savings under ISCC) and the maximum time frame for a balancing period is three months. Generated CO_{2eq} savings not assigned to a product within a respective period can be transferred to the next balancing period as long as the participating entities are ISCC certified. The product quantities with assigned CO_{2eq} savings under ISCC must be separately documented from products without assigned CO_{2eq} savings.

3.1.5 Mandatory information to be transferred within the supply chain

In the following, mandatory information is described, which needs to be transferred between different entities of the CCS supply chain (see figure 1):

CO₂ self-declaration

- PoO of CO₂
- CCS unit receiving the CO₂
- Amount of CO₂ captured
- GHG emissions related to capturing

CO₂ savings declaration

- CCS unit storing the CO₂ and issuing the CO_{2eq} savings (incl. address and certificate number)
- Processing unit receiving the CO_{2eq} savings (incl. address and certificate number)
- PoO of CO₂
- Quantity of issued CO_{2eq} savings

⁹ In case the calculation of net CO_{2eq} savings is done on a yearly basis, a conservative estimate of the emissions from capturing, transport and injection based on the previous years can be used to determine the net CO_{2eq} savings for a respective balancing period (e.g. 3 months). The balance of CO_{2eq} savings need to be reconciled, when the emissions from capturing, transport and injection are available for the respective year.

- Confirmation that CO₂ is physically received from CO₂ PoO at CCS unit

Self-declaration on physical traceability

- Confirmation of fossil intermediate product flow from CO₂ PoO to processing unit assigning the CO_{2eq} savings (incl. chemical / technical feasibility that intermediate products can be produced from products of processing unit capturing the CO₂)
- Supplier and recipients of fossil intermediate products
- Type of fossil intermediate products
- CO₂ PoO
- Site-specific baseline PCF of fossil intermediate products (PCF calculation without consideration of CO_{2eq} savings)

PCF declaration

- Supplier (incl certificate number) and recipient of product with assigned CO_{2eq} savings
- Type of product with assigned CO_{2eq} savings
- Total quantity of product with assigned CO_{2eq} savings
- Baseline PCF of given product (PCF calculation without consideration of CO_{2eq} savings)
- PCF with assigned CO_{2eq} savings
- Quantity of used CO_{2eq} savings
- Information on used assignment mechanism:
 - Were the CO_{2eq} savings only used to reduce processing emissions of the processing unit capturing the CO₂?
 - Were the CO_{2eq} savings used to compensate other emission within the supply chain of the product? (processing emissions of upstream elements of the supply chain, upstream transport emissions and feedstock emissions including extraction and mining of fossil resources)
- Confirmation chemical / technical feasibility: product with assigned CO_{2eq} savings can be produced from fossil intermediate product flow

3.1.6 Requirements for CCS units

CCS units can be certified for the “service” of permanent CO₂ storage. A prerequisite for this is that the CCS unit has a valid storage permit issued by the respective national/ international competent authority. The CCS unit shall have implemented a quality management system or shall be monitored by the respective competent authority documenting and ensuring that¹⁰:

*CCS unit needs
a valid storage
permit*

- the geological formation for CO₂ storing is defined
- the CO₂ is permanently stored
- the amount of CO₂ being stored is verified by an independent third party

¹⁰ Requirements in line with DIR 2009/31/EC on the geological storage of carbon dioxide

- the energy consumption for CO₂ injection and storing is monitored and reported
- the injection and storage facility is monitored. The monitoring programme should include:
 - measurement of background fluxes of CO₂
 - continuous measurement of the mass of CO₂ injected
 - determination of CO₂ emission from injection system
 - determination of any CO₂ fluxes through the seabed or ground surface
 - post-injection monitoring
 - incorporation of improvements in monitoring techniques over time
- regular reports by the operator to the competent authority are issued and regular inspections from third party verifiers that controlling the entire technical process of CO₂ storing are conducted.

3.1.7 Double claiming of CO_{2eq} savings

The double claiming of environmental attributes such as CO_{2eq} emission savings is not allowed under ISCC. The amount of CO_{2eq} emission savings being generated via the storage of CO₂ in the CCS unit can only be assigned to one defined volume of material under ISCC. The same CO_{2eq} saving can hence not be assigned twice or multiple times to different products of the supply chain. The CO_{2eq} savings can also not be separated, transferred, or sold individually without the product they were assigned to. Thus, in case the CO_{2eq} emission savings are used under ISCC, those cannot be used to generate e.g., carbon credits on the voluntary market.

*Double claiming
of CO_{2eq} savings
is not allowed*