

CORSIA SAF Certification with ISCC – The International Sustainability and Carbon Certification Scheme

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INTRODUCTION

Supporting the objectives of the Paris Agreement to keep the rise in global temperatures to 2 degrees Celsius or less within this century poses a great challenge to the world community. This is especially true for the transport sector. The International Energy Agency expects two thirds of the future oil demand to come from the transport sector. Especially air travel has experienced the highest growth rates in the past and is expected to continue to grow. The need to deal with CO₂ emissions has been recognized by ICAO and the aviation industry, and has led to the adoption by ICAO Member States of the global aspirational goal of carbon neutral growth after 2020. Many measures to achieve this goal will be needed, among them the use of Sustainable Aviation Fuels (SAF). They are of paramount importance in ICAO's basket of measures to reduce GHG emissions. Intensive research activities are now underway to develop new SAF, yet the most prominent and readily available SAF still come from biomass based fuels. Biofuels use an established technology with significant reductions in their carbon footprint, and a proven record in the road transport sector.

The ICAO Assembly acknowledged the need for SAF to be developed and deployed in an economically feasible, socially and environmentally acceptable manner. In many sectors, Sustainability Certification Schemes (SCS) have been implemented to verify compliance of economic operators with voluntary or mandatory sustainability criteria that address this need.

On the current CORSIA Framework, SAF need to comply with sustainability criteria that include:

- A SAF must achieve at least 10% GHG emission reduction on a life cycle basis. There are two ways of assessing such reduction:
 - Default life cycle emissions values provided at the ICAO Document "CORSIA default life cycle emission values for CORSIA eligible Fuels" (to be agreed by the ICAO Council); or
 - SAF fuel producers may calculate actual life cycle emissions values using the methodology to be defined in the ICAO Document "CORSIA Methodology for calculating actual life cycle emissions values"
- A SAF cannot be obtained from biomass obtained from high carbon stock land that was converted after 1 January 2008.

As defined in ICAO Annex 16, Volume IV, compliance with those criteria will be confirmed by Sustainability Certification Schemes (SCSs) to be approved by the ICAO Council. Such SCSs will need to comply with the requirements from the ICAO Document "CORSIA Eligibility Framework and Requirements for SCS".

Essentially, the International Carbon and Sustainability Certification (ISCC) is a SCS which is already in operation. The following section details the background and relevant experience of ISCC, aiming to illustrate typical aspects of sustainability certification that are representative to CORSIA requirements.

BACKGROUND OF ISCC

ISCC is a multi-stakeholder initiative governed by an association of more than 100 members from over than 30 countries. The program began operations in 2010 and has issued more than 20,000 certificates over the past eight years. Currently, more than 3,300 companies in 100 countries are ISCC certified. A continuous multi-stakeholder dialogue on the global and regional level is of fundamental importance for the further development of the scheme.

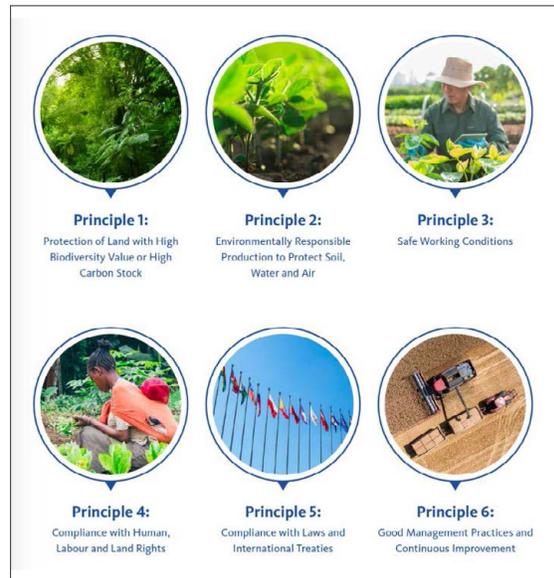
Currently, ISCC offers two certification schemes to address different market requirements:

- ISCC EU is recognized by the European Commission for proof of compliance with the legal requirements of the Renewable Energy Directive (RED) and the Fuel Quality Directive (FQD) in all Member States of the European Union (EU).
- The ISCC PLUS scheme is a voluntary certification for non-regulated markets and covers food, feed, and industrial applications on a global scale, as well as biofuels for non-EU markets. For instance, in 2018 ISCC PLUS was recognized by the Government of Japan for the verification of compliance of imported biofuels with Japan's mandatory sustainability requirements. ISCC is also accepted for the verification of compliance with certification requirements of the Liquid Fuel Supply Regulation of Queensland, Australia, since January 2017.

ISCC is committed to an environmentally, socially, and economically sustainable production of biomass and products derived from that biomass. For that, the ISCC certification requirements reflect the ten principles of the UN Global Compact with respect to human rights, labour, environment and anti-corruption. ISCC actively supports many of the United Nations Sustainable Development Goals (SDGs) by aligning the certification requirements with the associated targets, and by endorsing and implementing sustainability projects.

The ISCC Sustainability Requirements are divided into six principles and are applied to the most environmentally and socially sensitive activities on farms and plantations (see Figure 1).

FIGURE 1: ISCC Sustainability Principles



All kinds of agricultural and forestry feedstocks, as well as waste and processing residues can be certified by ISCC. Currently, around 50 million tons of agricultural feedstock and 10 million tons of waste and processing residues are certified under ISCC. Used cooking oil and animal fat make up the majority of waste and processing residues.

Traceability in supply chains must be ensured. According to the International Organization for Standardization (ISO), the term traceability describes the ability to identify and trace the origin, distribution, location, and application of products and materials through supply chains. This is obtained in the ISCC system through the individual certification of every supply chain element. Relevant product properties and related sustainability characteristics are forwarded through the supply chain by using sustainability declarations.

Chain of Custody is a general term used for making a connection between the sustainability claims of economic operators along the value chain. The combination of both traceability and chain of custody requirements ensures that the physical flow of materials can be traced back and forth throughout the supply chain, thus guaranteeing the integrity of sustainability certificates. This also ensures that sustainability characteristics can be assigned to individual consignments of material, and that the amount of sustainable material withdrawn from the supply chain

FIGURE 2: Forwarding of sustainability information in an ISCC certified supply chain for HEFA

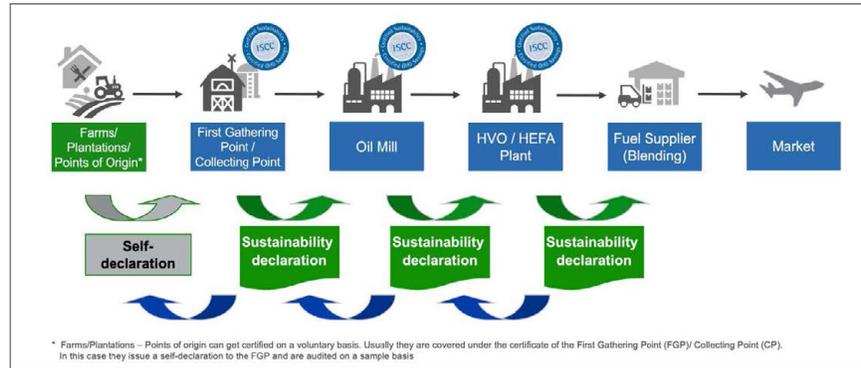
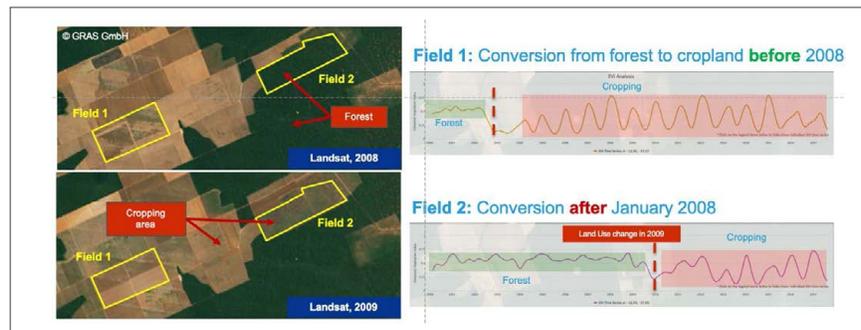


FIGURE 3: Analysis of the EVI time series indicates the exact time of the land use change and the type of land cover before and after the conversion



at any stage does not exceed the amount of sustainable material supplied. The Mass Balance methodology allows the physical mix of sustainable and non-sustainable products at every stage of the value chain. The specific properties of sustainable material are determined via bookkeeping.

ISCC ACTIVITIES IN THE AVIATION SECTOR

Many ISCC compliant products are associated with renewable energy uses, including fuels.. So far, ISCC certified fuels have been mainly used in road transportation. The experience gained in that market is of high value for the deployment of SAF. ISCC is also a member of the Aviation Initiative for Renewable Energy in Germany (aireg). Most jet fuel producers and feedstock suppliers are members of the ISCC association or are active users of the system. ISCC-certified jet fuel has been used by Lufthansa in a pilot program. ISCC is also involved in a practical project aimed at analyzing the reporting and

monitoring requirements in supply chains that involve multi-blends of fossil and sustainable jet fuels, as shown in Figure 2.

Experience Gained With Verification of Land Use Change

The Sustainability Criterion 2 of CORSIA requires that SAF, “... should not be made from biomass obtained from land with high carbon stock”. Such high carbon stock areas and direct land use change can be identified by using appropriate databases and satellite images.

ISCC uses the latest remote sensing technologies to support the verification of land use change and to ensure that supply chains are deforestation-free. Based on the Enhanced Vegetation Index (EVI), changes in vegetation cover can be detected. Different types of green cover can be distinguished to understand the land use history, and most importantly determine the type and exact point in time of a land use change that may be in conflict with sustainability requirements (Figure 3).

This method allows a credible and cost efficient verification of compliance with carbon stock sustainability requirements.

GHG Emission Calculations and Reductions

ISCC certification covers the GHG emissions of all elements of the supply chain, from raw materials production to distribution of the final product, including cultivation, collection, and conversion processes, as well as the transport and distribution of intermediate and final products. ISCC offers a choice of using default or actual life cycle emission values. The number of certificate holders using actual values is constantly increasing, indicating a rising market relevance of GHG performance of renewable fuels.

While in the beginning there was only little known about the impact of GHG emissions and how GHG savings can be achieved, ISCC system users are now well-versed in analyzing their energy balances and in taking actions to reduce GHG emissions. This is not only apparent in the clear trend towards the use of actual values, but also in the improvement of the GHG savings of biofuels used in the EU market as is illustrated in Figure 4.

ISCC has implemented a comprehensive set of measures to guarantee a high quality GHG calculation and verification. Specific measures consist of the following:

- Specific ISCC GHG training sessions for auditors and system users.
- Audit procedures with detailed guidance on GHG requirements.
- Specific system updates on ISCC GHG requirements.
- List of Materials eligible for certification under ISCC (i.a. to support classification of feedstock).
- ISCC Integrity Program with focus on GHG calculations.
- Application of the GRAS tool with lists and maps of regional agricultural crop GHG values and carbon stocks.

Outlook: How SCSs Can Support the Implementation of CORSIA

Many economic operators **such as agricultural producers, waste collectors, traders and fuels producers** in potential SAF supply chains are already certified and are familiar with sustainability requirements and GHG calculations. On a global scale, large volumes of certified feedstocks that can be used for the production of SAF are already available. In 2018, ISCC certified approx. 70 million tons of agricultural and waste feedstocks. In the same year, approx. 18 million tons of ISCC certified renewable fuels were sold to the markets.

The use of existing SCS for compliance with CORSIA, as defined in Annex 16 vol IV, will help to bring commercial SAF quantities to the market. It also reduces the organizational and cost burden on companies in the supply chain, and thus will increase acceptance.

ISCC is a well experienced SCS with innovative tools to verify in a reliable way sustainability requirements set by CORSIA. ISCC is prepared to further support the CORSIA process and to contribute to a successful deployment of SAF in future.

FIGURE 4: GHG savings from biofuels in Germany - 2014 - 2016 (Source: German Federal Office of Agriculture and Food). (FAME - Fatty-Acid Methyl Esters)

