











# Scaling Up the Market for Sustainable Aviation Fuels with ISCC

Dr Norbert Schmitz, Managing Director, ISCC System GmbH  
ISCC Global Sustainability Conference, 24 February 2021

# SAF allow immediate emission reduction. Electrification and fuel cells are currently not feasible and years away from large-scale application

Comparison vs fossil kerosene	1 Battery-electric 	2 H <sub>2</sub> fuel cell 	H <sub>2</sub> turbine 	3 Sustainable aviation fuel 
Climate impact <sup>i</sup> 	100% reduction <sup>i</sup>	75%-90% reduction	50%–75% reduction	30%-60% reduction <sup>iii</sup>
Aircraft design 	Low-battery density limits ranges to 500km–1,000km	Feasible only for commuter to short-range segments	Feasible for all segments except for flights >10,000km	Only minor changes
Aircraft operations 	Same or shorter turnaround times	1-2x longer refuelling times for up to short range	2–3x longer refuelling times for medium and long range	Same turnaround times
Airport infrastructure 	Fast-charging or battery exchange system required	LH <sub>2</sub> distribution and storage required		Existing infrastructure can be used

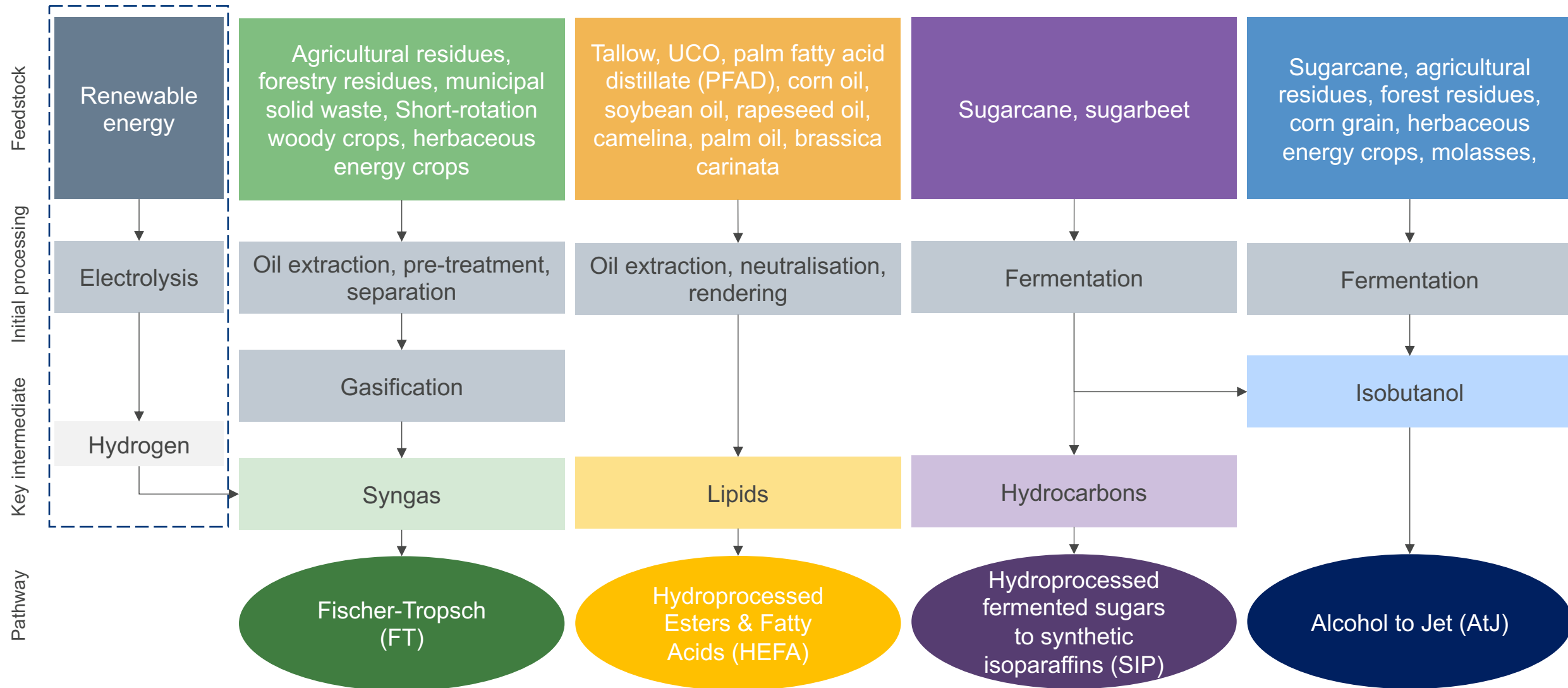
■ Major advantages    ■ Major challenges

i. Including CO<sub>2</sub>, NOx, water vapour and contrails    ii. Assuming 100% renewable electricity    iii. For e-fuels with fully decarbonized supply chain  
**Source:** Clean Sky 2 JU & FCH 2 JU: Hydrogen-powered aviation report (made possible with funding provided by the EU); expert interviews



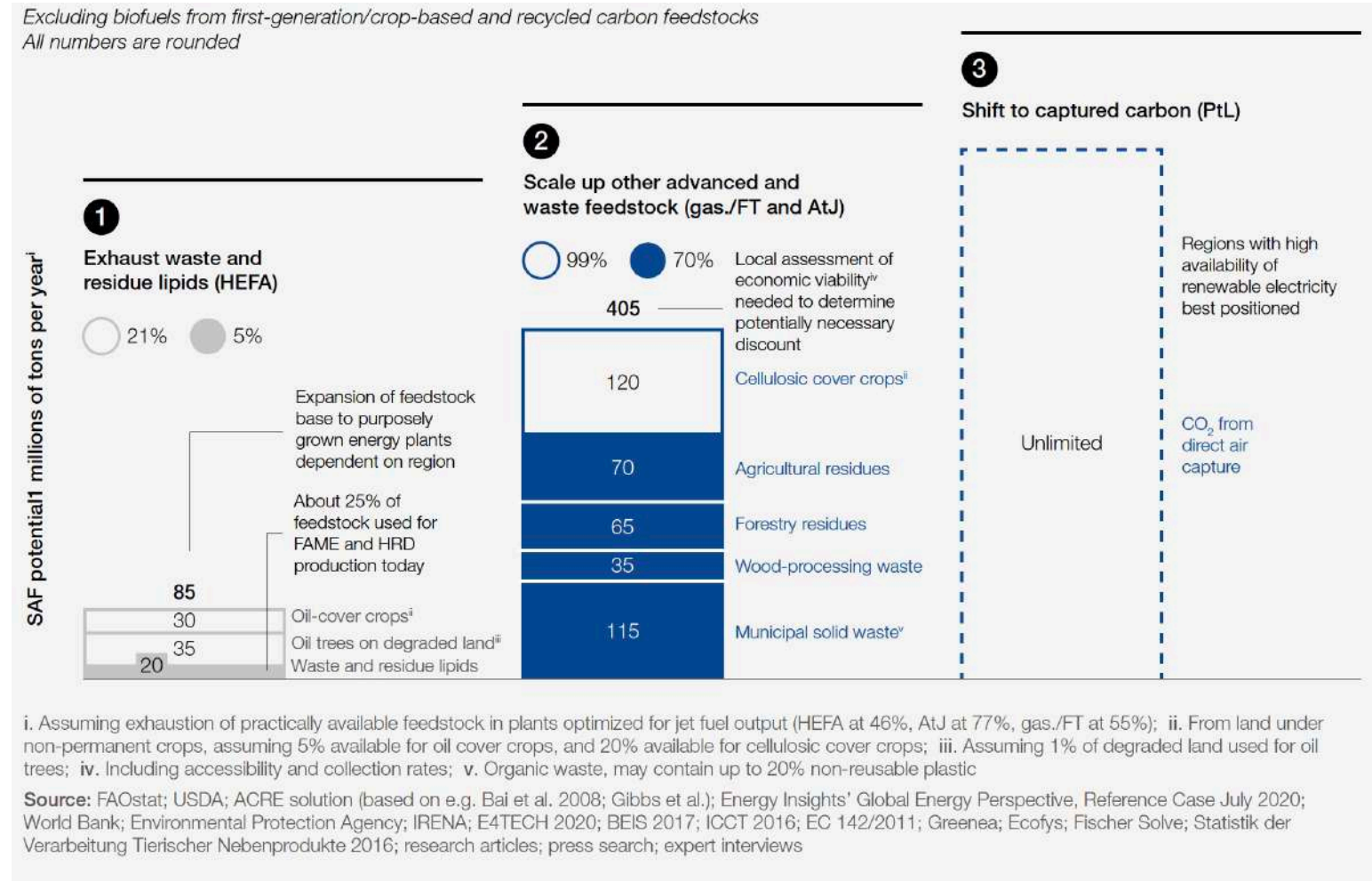
Source: World Economic Forum – Clean Skies Tomorrow Insight Report, November 2020

# Different fuel pathways for the production of SAF



# Scaling up the production of feedstocks is essential and yet there are still some challenges

- Collectability of certain feedstocks
- Maturation of technologies
- Need for increasing demand, stipulated by consumer behaviour and supportive legislations
- Competition from other industry sectors, mainly road transportation and the chemical industry
- Production costs of SAF in comparison with fossil jet fuel





ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ICAO document

CORSIA Approved Sustainability Certification Schemes



November 2020



Carbon Offsetting and Reduction Scheme for International Aviation

# CORSIA Approved Sustainability Certification Schemes (SCS)

Two SCS are currently recognized by ICAO for the certification of CORSIA Eligible Fuels:

Name of the Sustainability Certification Scheme	Date of approval	Website	Applications and other Supporting Information	Application date
International Sustainability and Carbon Certification (ISCC)	18/Nov/2020	<a href="https://www.iscc-system.org/">https://www.iscc-system.org/</a>	<a href="https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-ISCC.aspx">https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-ISCC.aspx</a>	30/Apr/2020
Roundtable on Sustainable Biomaterials (RSB)	18/Nov/2020	<a href="https://rsb.org/">https://rsb.org/</a>	<a href="https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-RSB.aspx">https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-SCS-evaluation-RSB.aspx</a>	30/Apr/2020

Source: ICAO website: <https://www.icao.int/environmental-protection/CORSIA/Pages/implementation-elements.aspx>

© ISCC System GmbH: For personal use only. Reproduction and distribution is prohibited.

# The ICAO Council adopted a set of sustainability criteria for CORSIA eligible fuels

1

## Greenhouse Gases

2

## Carbon Stock

Principle

CORSIA eligible fuel should generate **lower carbon emissions** on a life cycle basis

CORSIA eligible fuel should **not** be made from biomass obtained **from land with high carbon stock**

Criteria

At least **10% net GHG emissions** reductions compared to the baseline life cycle emissions values for aviation fuel on a life cycle basis

**No land use change** of land with high carbon stock (primary forests, wetlands and peatlands) **on or after 01 January 2008**



# CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes (SCS)

## General requirements for SCS



Documentation & Management & Transparency



Annual reports, Monitoring & System Review



Stakeholder Engagement



GHG Reporting & Accounting



Complaint Procedure



Risk Management Plan

## Requirements set by SCS for economic operators



Mass Balance & Supply Chain Traceability



(Group) Audits & Certificate Issuance



Transparency on other SCS used



Assurance Level & handling Non-compliances



Accreditation & Auditing Standards



CORSIA Certification Requirements

# ISCC CORSIA is a stand-alone system. Combined audits with ISCC PLUS or EU are facilitated by harmonized system elements



Multi-stakeholder organization



Quality and risk management



Integrity Program



Requirements for certification bodies



Requirements for conducting audits



Registration and certification process



# The **System Documents** build the basis of the ISCC CORSIA certification system

- The ISCC CORSIA System Documents provide clear answers regarding **certification requirements and processes** for certification bodies and for System Users
- All System Documents are **publicly available** on the ISCC website



# The ISCC CORSIA standard is ready for take-off. All necessary documents are finalized



The ISCC CORSIA certificate shows compliance of the economic operator with all relevant CORSIA requirements

The ISCC CORSIA audit procedures facilitate an efficient, consistent and reliable audit.

The ISCC CORSIA sustainability declaration and self-declarations allow for full traceability along the supply chain

Logo of the Certification Body (copy logo into the header)

**CORSIA**

**Certificate**  
according to the  
**Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)**  
As developed by the International Civil Aviation Organization (ICAO)

**Certificate Number: CORSIA-ISCC-Cert-unique certificate number**

Name of the certification body  
Address of the certification body

certifies that  
(Legal) name of the system user (operational unit)  
Address of the system user (operational unit) according to ISCC registration

complies with the requirements of CORSIA and the certification system  
**ISCC CORSIA**  
(International Sustainability and Carbon Certification)  
which is approved by the ICAO Council.

Place of the audit  
(if different from the legal address of the system user as stated above; only applicable for paper traders):  
Address of the audit / n.a.

This certificate is valid from dd.mm.yyyy to dd.mm.yyyy.

The site of the system user is certified as:

Please select one option:  
Please select one option:  
Please select one option:  
Please select one option:  
Specify Individually (Delete Field When Not Used)

Place, Date  
Place and date of issue Stamp, Signature of issuing party

The issuing Certification Body is responsible for the accuracy of this document.  
Version / Date: 1 (no adjustments) / 02.mmm.yyyy

Page 1 of 3

ISCC CORSIA Audit Procedure for Chain of Custody

No.	Chapter	Remarks	Risk level	Audit Intensity
0	Basic data	Basic data of the operational unit to be certified	Not applicable	
1	Registration system	Risk assessment according to ISCC CORSIA ISO 9001:2015	Not applicable	
2	Traceability	When Chapter No. 2, Item 4 the risk of a flawed documentation has to be evaluated. The risk level determines the audit intensity	High	The documents of three successive months should be checked completely
3	Integrity	When Chapter No. 2, Item 4 the risk of a flawed documentation has to be evaluated. The risk level determines the audit intensity	Medium	The documents of one month should be checked completely and random samples should be taken from three successive months
4	Physical Segregation	Application of default values or calculation of actual values	Medium	Documents taken from random samples of three successive months should be checked
5	Life Cycle Emissions	List of best Practices, Non-compliance list and Measures	Not applicable	Mandatory
6	Other	Defined list of all points marked "no" in the column "Compliance"	Not applicable	

ISCC CORSIA Audit Procedure for Farm / Production

No.	Template	Remarks	Risk level	Audit Intensity
0	Basic data	Basic data of the farm/production audited	Not applicable	
1	Verification of land use and land use change	ISCC Protocol 1. Requirements for the production of biomass according to ISCC 202 sustainability requirements for the production of biomass	High	Risk assessment, and by that, the sample site has already been determined by the auditor in the framework of the audit of the first gathering point!
2	Traceability	When Template No. 3 the risk of a flawed documentation has to be evaluated (applicable for individually certified farm/production)	High	The documents of three successive months should be checked completely
3	Integrity	When Template No. 3 the risk of a flawed documentation has to be evaluated (applicable for individually certified farm/production)	Medium	The documents of one month should be checked completely and random samples should be taken from three successive months
4	Physical Segregation	Application and calculation of Core Life Cycle Assessment (LCA) default values or Action Items LCA values (individually calculated values)	Medium	Documents taken from random samples of three successive months should be checked
5	Life Cycle Emissions	List of best Practices, Non-compliance list and Measures	Not applicable	Mandatory
6	Other	Defined list of all points marked "no" in the column "Compliance"	Not applicable	

ISCC CORSIA Audit Procedure for Point of Origin

No.	Chapter	Remarks
0	Basic data	Basic data of the Point of Origin to be certified
1.1	General	Applicable if the Point of Origin is individually certified
4.1	Certified Point of Origin requirements	Applicable for all audits of Points of Origin (certification audits and sample audits)
4.2	Compositional	Applicable for all audits of Points of Origin (certification audits and sample audits)
6.3	Public disclosure	Applicable for all audits of Points of Origin (certification audits and sample audits)
6.4	Traceability	Applicable if the Point of Origin is individually certified
7	List of best Practices, Non-compliance list and Measures	List of non-compliance and definition of corrective actions

ISCC CORSIA Sustainability Declaration for Raw Materials and Intermediate Products

Supplier information: Name, Address, Country of origin, Quantities, ISCC Covered material, ISCC Chain of custody status

Recipient information: Name, Address, Country of origin, Quantities, ISCC Covered material, ISCC Chain of custody status

General information: Name and date of document, Date of issuance, Supplier, Recipient, Certification System: ISCC CORSIA, Certificate Number

Proof of Sustainability (PoS) for CORSIA Eligible Fuels

1. Sustainability criteria of the raw material

2. Sustainability criteria of the fuel

3. Life Cycle Emissions Information

Required documentation and information

Place, Date, Signature

# Training of ISCC CORSIA auditors has started as well as regular stakeholder dialogue in a Technical Committee



Stakeholder Meeting

First virtual aviation meeting in December 2020 with more than **130 participants**

- Speakers from the European Commission, IATA, aviation organisations and market participants
- Demand for the establishment of a Technical Stakeholder Committee “Sustainable Aviation Fuels”

→ **Meeting** of the ISCC Technical Stakeholder Committee is **scheduled for Autumn**

[More information on the ISCC website](#)



ISCC CORSIA Training

First training course in February with more than **50 participants**

- The training course is open to all interested parties. Participation is mandatory for ISCC auditors who want to conduct ISCC CORSIA audits
- Detailed insights on the legal framework of CORSIA, SAF certification processes and sustainability requirements

→ **Next training course** is **scheduled for Autumn**

[More information on the ISCC website](#)

# ISCC certification is based on long-term experience in the transport sector, applying GHG calculation methodologies and state-of-the-art technology



**Over 83 million tons of certified feedstock** basis available which could be used for alternative jet fuels



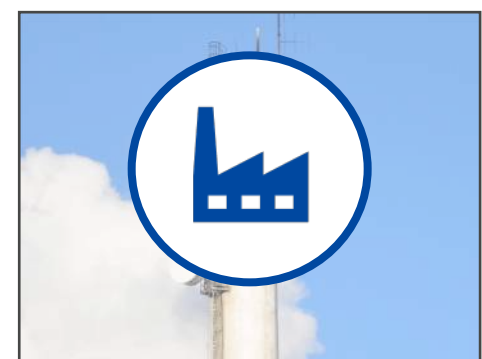
Currently, more than **4,600 companies** use ISCC  
**Major fuel producers** are active users of the ISCC certification system



ISCC has vast **experience in the transportation market** and supports the certification of **advanced and recycled carbon fuels**



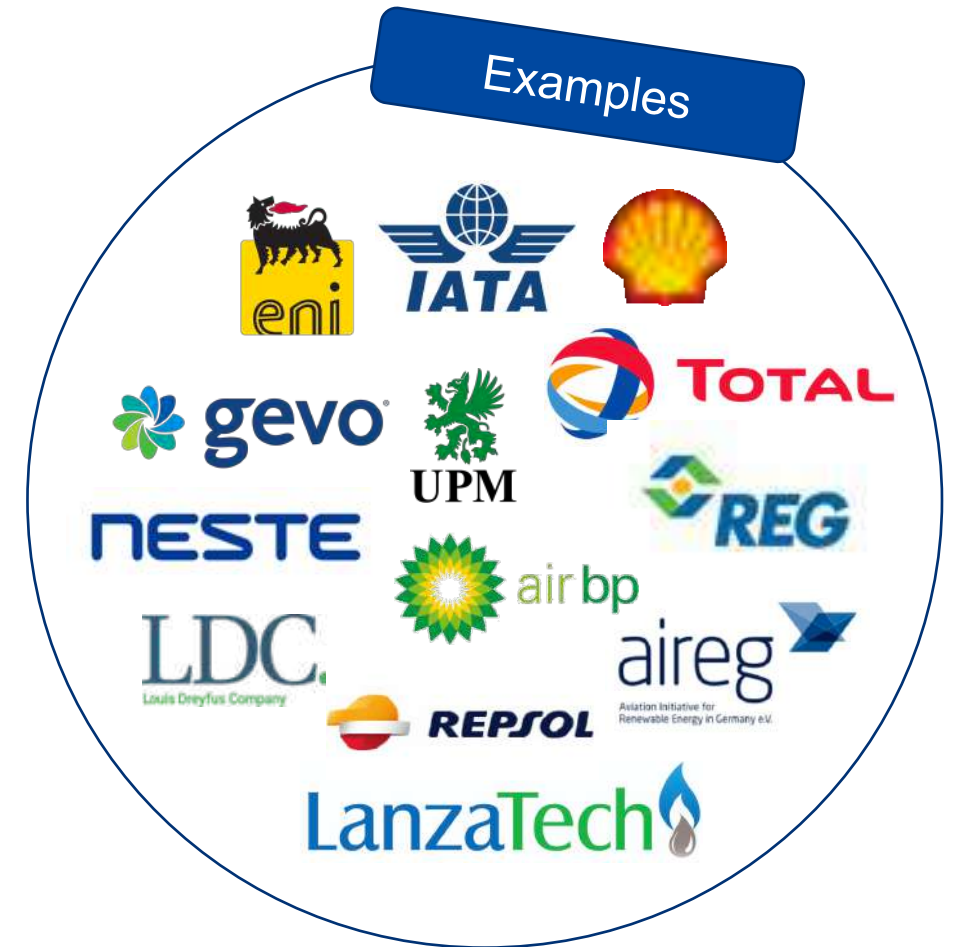
Latest remote sensing technologies to support the verification of land use change and to ensure that **supply chains are deforestation-free**



Comprehensive experience with **reliable greenhouse gas (GHG) emissions calculations** – over 1,800 certificates based on actual GHG values

# ISCC is engaged in supporting the aviation industry in achieving its climate targets

- Several ISCC members and system users are active in SAF
- ISCC is an active member of the CAEP Fuels Task Group that is working on CORSIA eligible SAF and LCAF (lower carbon aviation fuels)
- ISCC was involved in a scientific project analysing reporting requirements in supply chains of aviation fuel multi-blends
- ISCC is actively supporting various initiatives, and conducts pilots in supply chain certification
- ISCC currently has 2 certificates covering HEFA and 46 covering HVO which can be converted into HEFA





Many thanks for your attention!

---

Dr Norbert Schmitz, ISCC System GmbH  
Hohenzollernring 72, 50672 Cologne, Germany  
Email: [schmitz@iscc-system.org](mailto:schmitz@iscc-system.org)

Follow us on   