



Waste and Residue Based Sustainable Aviation Fuels under CORSIA

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Technical Stakeholder Meeting “Waste, Residues and Advanced Low Carbon Fuels”, Online, 23 September 2021

Post-COVID-19 recovery of the aviation industry needs to focus on emission reductions and investment in SAF

“

“While our industry’s short-term priorities are focussed on COVID-19 recovery, now is the time **to rebuild operations in more sustainable ways** such as **adopting Sustainable Aviation Fuels (SAF)** and setting clear strategies to reduce net aviation CO₂ emissions.

”

Robin Hayes, CEO of JetBlue and Chair of the IATA Board of Governors

(Date: 25 November 2020)

Annual aviation fuel demand expected to exceed 400 million tons by 2030 and 500 million tons by 2045

Assumptionsⁱⁱ



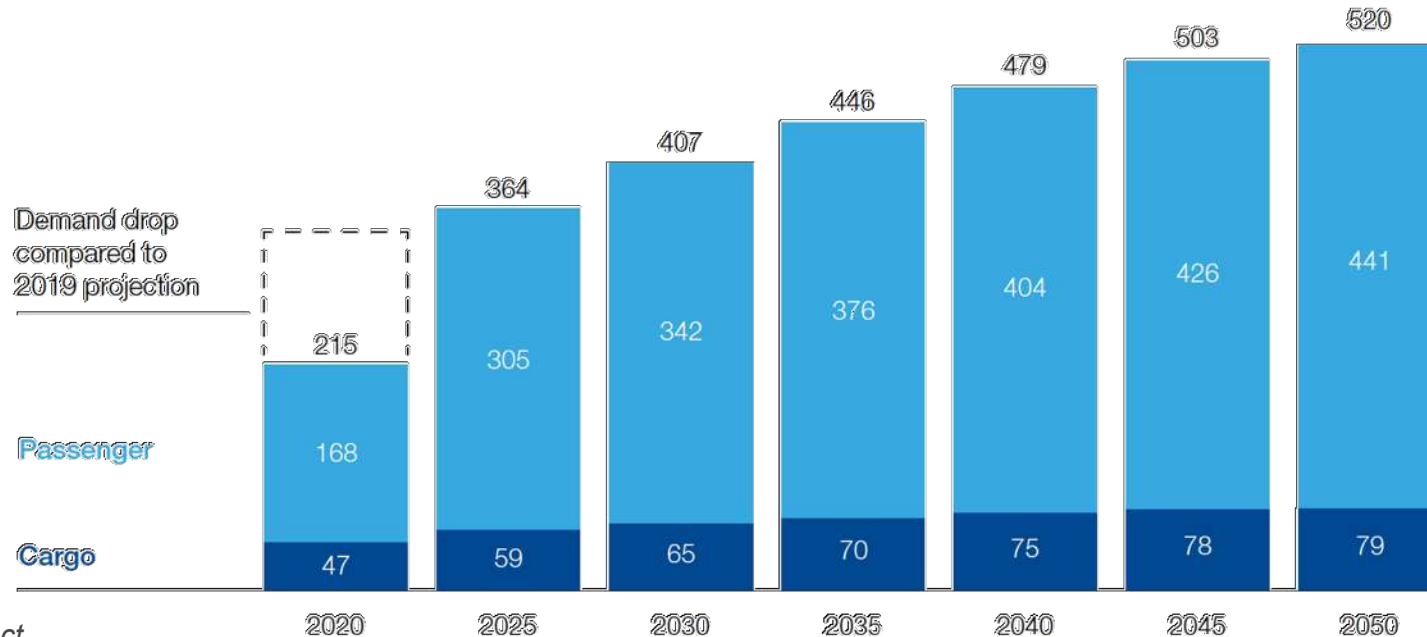
Fuel efficiency improves by 1% annually through 2050, based on historical trends



Fuel mix of 100% keroseneⁱⁱⁱ in 2050, with no commercial electric or hydrogen planes

Global aviation energy demand projection (million of tons of jet fuel per year)

Equivalent global CO ₂ emissions ^{iv} assuming 100% fossil jet (billions of tons)	2020	2025	2030	2035	2040	2045	2050
	0.7	1.1	1.3	1.4	1.5	1.6	1.7



Numbers include COVID-19 Impact

Sources: Energy Insights' Global Energy Perspective, Reference Case A3 October 2020; IATA; ICAO

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In several countries, planned and existing SAF policies already include a particular focus on waste and advanced feedstocks. Example Europe

EU RED II: The RED II sets an incentive for the share of fuels supplied in the aviation sector to be considered with 1.2 times their energy content towards the targets for renewable energy. Combined with the option of double counting for SAF produced from feedstocks listed in Annex IX of the RED II the energy content could potentially be counted 2.4 times

ReFuelEU Aviation Initiative: The proposal includes a blending obligation for fuel suppliers (starting from 2% SAF by 2025 up to 63% by 2050). A certain SAF volume will need to be produced from Annex IX feedstocks

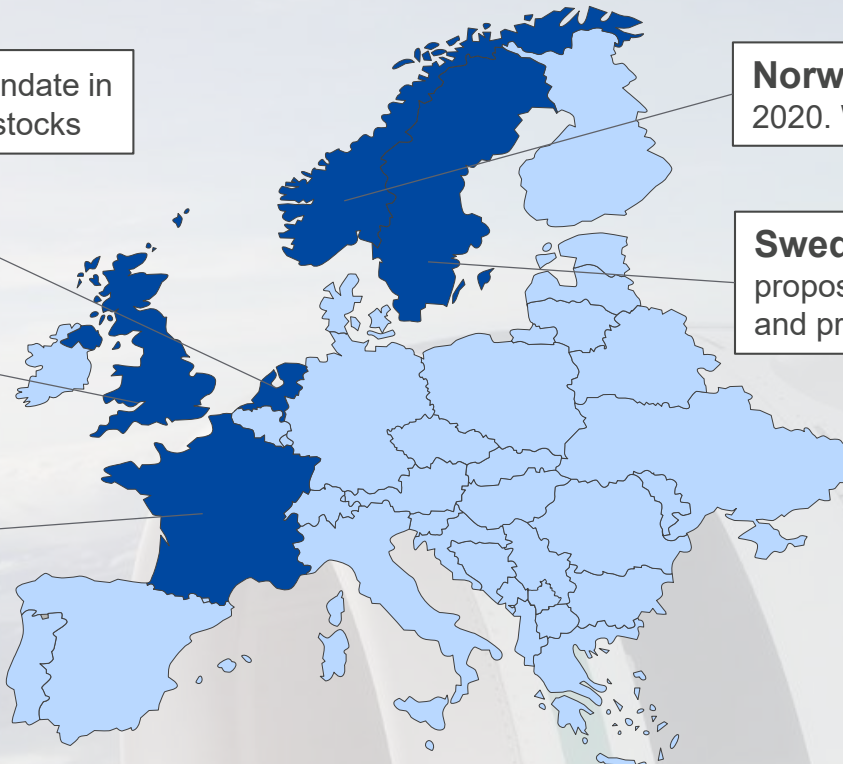
The Netherlands: SAF blending mandate in development. Focus on advanced feedstocks

UK: £22 million of government funding available to industry to develop waste-based advanced low carbon fuels in the UK for aviation and freight

France: SAF roadmap with a focus on waste and advanced feedstocks

Norway: SAF blending mandate of 0.5% since 2020. Waste and residues derived SAF only

Sweden: Study underlying the SAF legislative proposal explicitly mentions forestry, agriculture and processing residues as suitable feedstocks



Source: Aireg Roadmap 2020, World Economic Forum – Clean Skies Tomorrow Insight Report, 2020, biofuelsflightpath.eu

Airlines publish their efforts to deploy SAF to reduce their environmental impact

Examples



*“Oneworld member airlines have committed to net zero carbon emissions by 2050. The airlines will develop their individual approaches to reach the target of net zero carbon emissions by 2050, through various initiatives such as **investments in sustainable aviation fuels** among other measures.”*

(Oneworld, oneworld website, 31 August 2021)

*“International Airlines Group (IAG) has become the first European airline group to commit to **powering 10 per cent of its flights with sustainable aviation fuel by 2030.**”*

(International Airlines Group, IAG website, 22 April 2021)



*“Cathay Pacific has committed to buying **1.1 million tonnes of Sustainable Aviation Fuel** over 10 years – enough for about 2% of our current operations.”*

(Cathay Pacific website)



CATHAY PACIFIC



ISCC has been engaged in supporting the aviation industry in achieving its climate targets for several years now

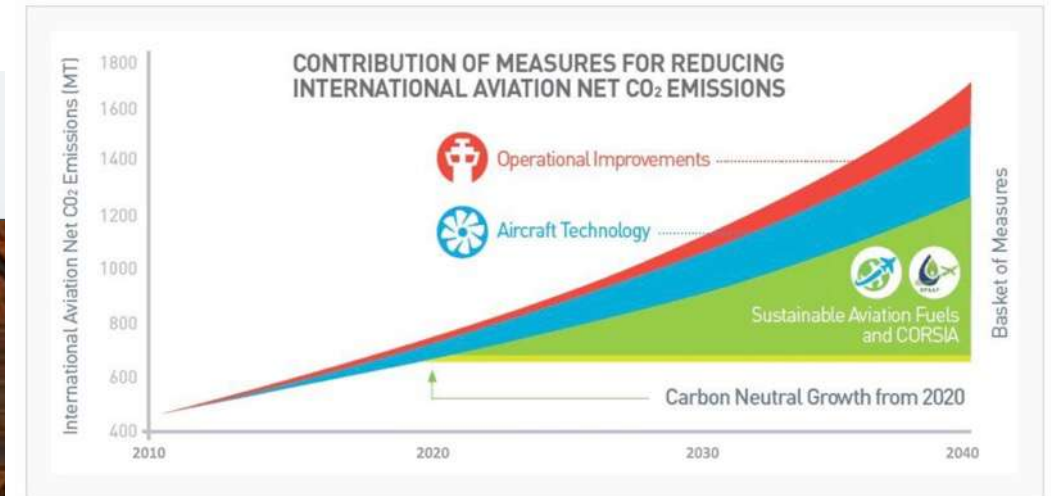


- Several **ISCC members and system users** are active in the field of sustainable aviation and sustainable aviation fuels
- ISCC is an active member of the **CAEP Fuels Task Group** that is working on the further development of CORSIA eligible SAF and LCAF (lower carbon aviation fuels)
- SAF used by **Lufthansa** in **early test flights** was ISCC certified
- ISCC was involved in a **scientific project** analysing reporting requirements in supply chains of **aviation fuel multi-blends**
- ISCC actively supports **various initiatives**, and conducts pilots in supply chain certification
- ISCC currently has **3 certificates under its CORSIA standards**, 6 certificates covering **co-processed SAF**, 5 covering **HEFA**, and 103 covering **HVO**

CORSIA* was agreed on by the ICAO** Council as a new global market-based measure in October 2016



Source: ICAO. <https://www.icao.int/newsroom/pages/icao-assembly-achieves-historic-consensus-on-sustainable-future-for-global-civil-aviation.aspx>



CORSIA covers the majority of international air travel and will be implemented in several phases

Timeline for ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)



- **104 states** (including all EU Member States), representing around **80% of international aviation** participate in CORSIA*
- **The majority of airlines** will be affected by these developments



In November 2020, the **ISCC CORSIA** Certification System was approved by the ICAO Council.

Since then, economic operators and airlines can **demonstrate compliance with the CORSIA Sustainability Criteria for CORSIA Eligible Fuels** by applying the ISCC CORSIA Certification System.



ISCC offers two options for certifying CEF: ISCC CORSIA and CORSIA PLUS. The systems differ in their sustainability requirements for biomass production



- **ISCC CORSIA** certification shows compliance with the CORSIA Sustainability Criteria for CEF
 - 10% lower GHG emissions on a life cycle basis compared to fossil jet
 - No biomass from high carbon stock lands for CEF production
 - Calculation of direct land use change emissions in case of land use conversion



- **ISCC CORSIA PLUS** certification shows compliance with the CORSIA Sustainability Criteria for CEF **plus** additional sustainability requirements for biomass production
- Sustainability requirements under ISCC CORSIA PLUS are divided into the **six ISCC CORSIA PLUS Principles**

The first three certificates under ISCC CORSIA have already been issued. More certifications are in the pipeline



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

Certificate Number: ISCC-CORSIA-Cert-DE105-83050301

Control Union Certifications Germany GmbH
Dorotheastr. 30, D-10318 Berlin
certifies that

BP Oil España S.A.U. Refinería de Castellón
Poligono El Serrallo, 12080 Castellón,
Spain

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):
n.a.

This certificate is valid from 30.08.2021 to 29.08.2022.

The site of the system user is certified as:

Trader
Co-Processing plant

CUC Germany GmbH
Dorotheastr. 30, D-10318 Berlin
Tel: +49 (0) 30 509 69 88 - 0
Fax: +49 (0) 30 509 69 88 - 88

Berlin, 30.08.2021
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) / 30.08.2021

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

Certificate Number: ISCC-CORSIA-PLUS-Cert-IT206-1

RINA Services S.p.A.
Via Corsica, 12 16128 Genova ITALY
certifies that

ENI TRADE & BIOFUELS S.P.A.
123 BUCKINGHAM PALACE ROAD SW1W 9SL LONDON UNITED KINGDOM

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

This certificate is valid from 06.07.2021 to 05.07.2022

The site of the system user is certified as:
Trader with storage

Genova, 06.07.2021
Place and date of issue

Stamp, Signature of issuing party

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

Certificate Number: ISCC-CORSIA-Cert-DE105-87947701

Control Union Certifications Germany GmbH
Dorotheastr. 30, D-10318 Berlin
certifies that

Idemitsu International (Asia) Pte Ltd
3 Killiney Road, No. 04-03, Winsland house 1, 239519 Singapore

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):
n.a.

This certificate is valid from 24.08.2021 to 23.08.2022.

The site of the system user is certified as:
Trader

CUC Germany GmbH
Dorotheastr. 30, D-10318 Berlin
Tel: +49 (0) 30 509 69 88 - 0
Fax: +49 (0) 30 509 69 88 - 88

Berlin, 24.08.2021
Place and date of issue

Stamp, Signature of issuing party

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The use and certification of waste, residues and by-products as feedstocks for SAF is beneficial in many ways and for different stakeholders



No food versus fuel debate



Supporting the circular economy by reducing the use of finite resources



No land use change issues



Policy incentives by authorities



High life cycle emissions savings potential

Many wastes, residues and by-products eligible under CORSIA have already been certified under other ISCC schemes

Examples

Processing residues



Empty palm fruit bunches



Tall oil

Wastes



Used cooking oil (UCO)

Agricultural and forestry residues



Cobs



Manure

By-products



Palm fatty acid distillate (PFAD)



Palm oil mill effluent (POME)



Sewage sludge



Municipal solid waste



Bark



Branches



Tallow

ISCC offers comprehensive ISCC CORSIA trainings



The flyer for the ISCC CORSIA Training Course features a collage of images: an airplane in flight, a person working on a laptop, a field of corn, a hay bale, and an aircraft engine. The text on the flyer includes the title 'ISCC CORSIA Training', the dates '15 – 16 September 2021', and the description 'Online Training Course'. A 'Content:' section lists the following topics: Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) - regulatory framework conditions; Comprehensive information about the ISCC CORSIA and CORSIA PLUS certification systems; ISCC audit requirements, reporting, traceability and chain of custody; Eligible feedstocks and materials; Life cycle assessment and verification; and Low LUC risk certification. The ISCC logo is located at the bottom right of the flyer.

ISCC CORSIA Training

15 – 16 September 2021
Online Training Course

Content:

- Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) - regulatory framework conditions
- Comprehensive information about the ISCC CORSIA and CORSIA PLUS certification systems
- ISCC audit requirements, reporting, traceability and chain of custody
- Eligible feedstocks and materials
- Life cycle assessment and verification
- Low LUC risk certification

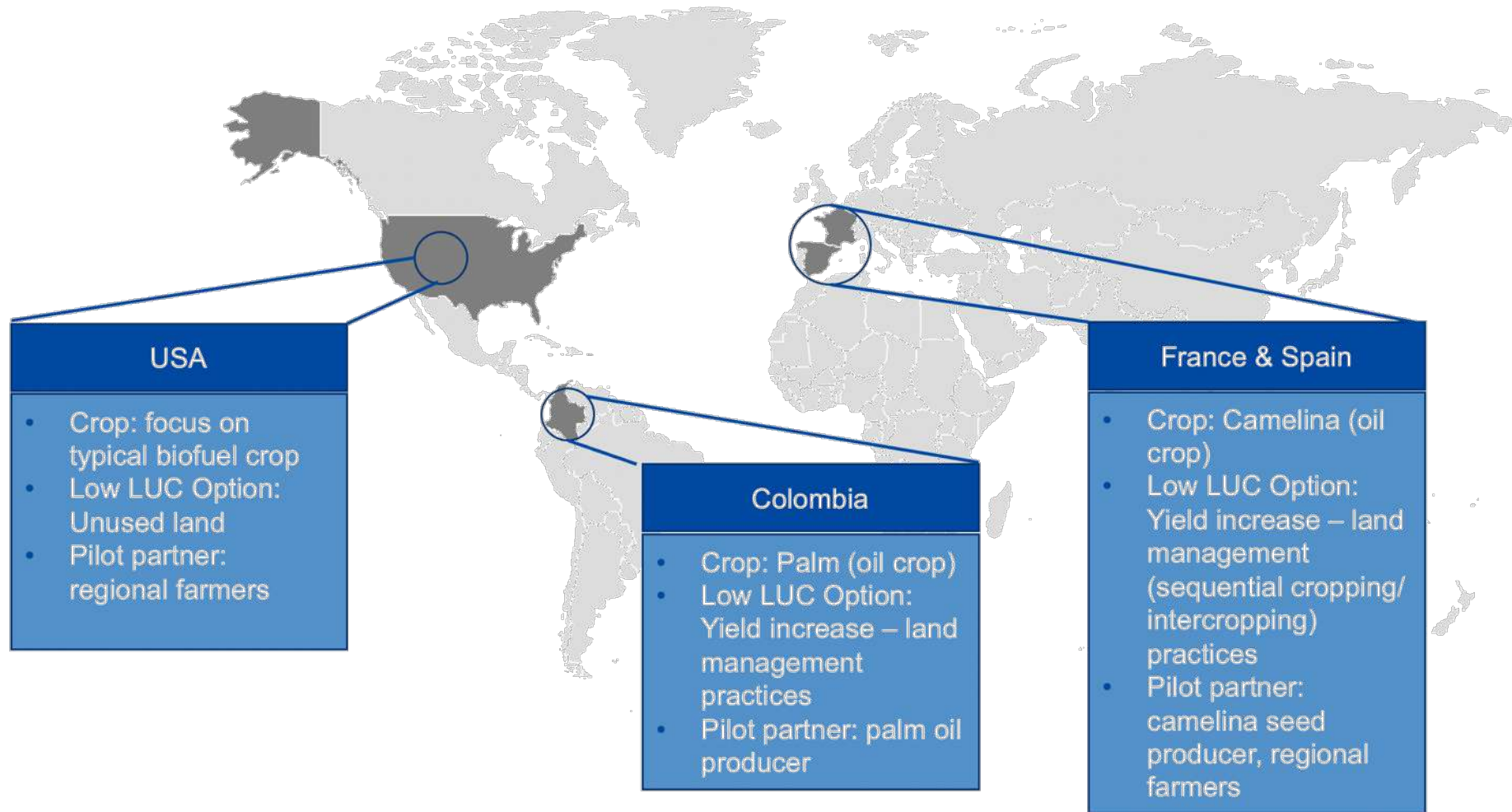
 ISCC
International Sustainability
It Carbon Certification

- The trainings provide **detailed insights** into a wide variety of topics around **ISCC CORSIA** and the **certification of CORSIA eligible fuels**
- Both trainings conducted so far counted over **50 participants** each
- **Participation is mandatory for ISCC auditors** who want to conduct ISCC CORSIA or CORSIA PLUS audits
- **More than 40 auditors** from 10 certification bodies have participated so far and **are in the position to conduct CORSIA audits under ISCC**
- The **target audience** also includes feedstock and fuel producers, traders, airlines, airport operators and other interested parties

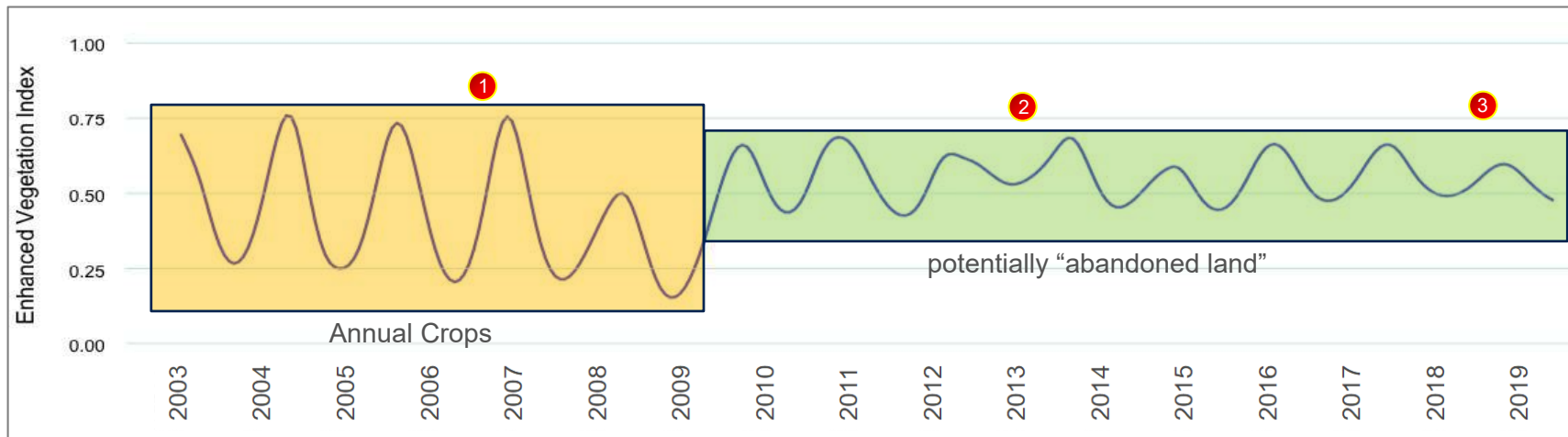
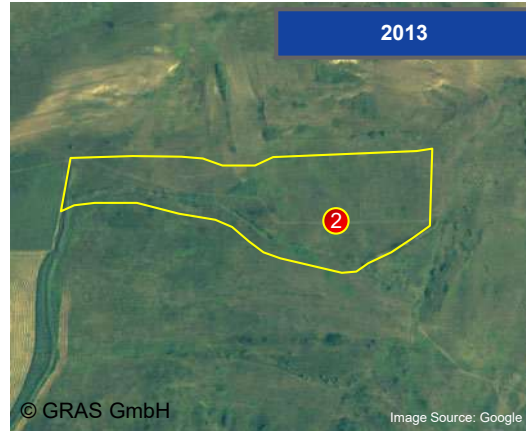
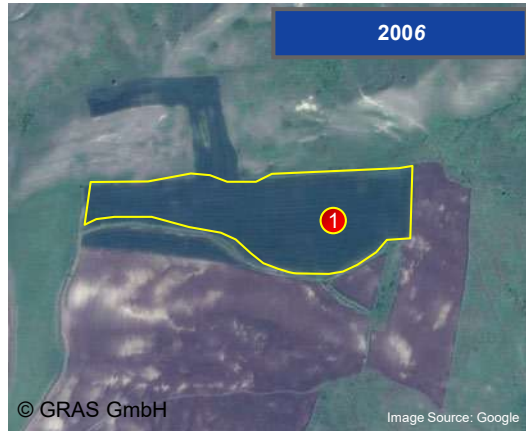
ISCC puts major emphasis on a regular and regional stakeholder dialogue



Different options of low LUC risk approaches have been tested in ISCC CORSIA pilot audits



Remote Sensing methods are used to support the certification of low LUC risk feedstocks, e.g. by identifying unused land and the land use history



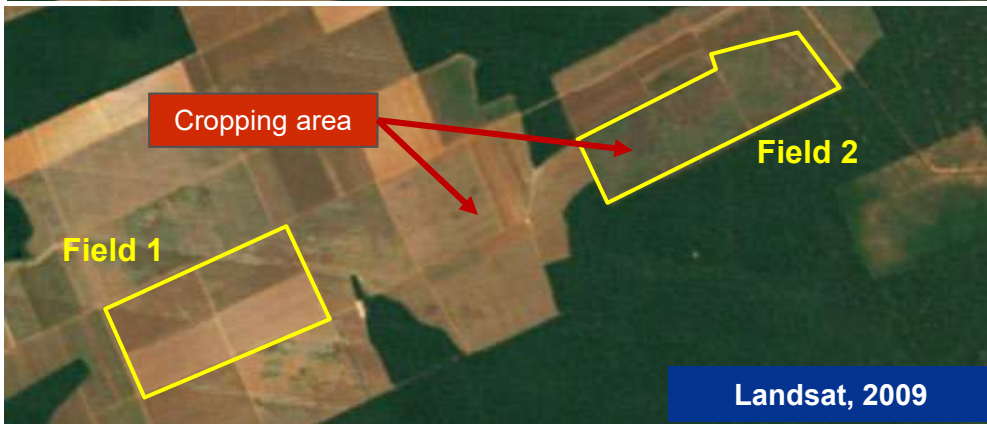
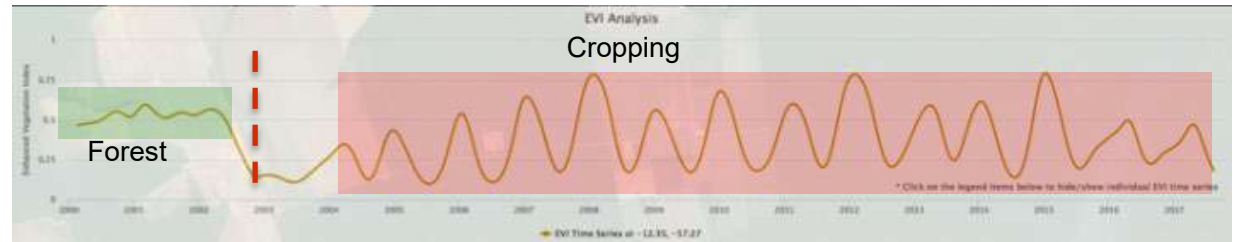
- The vegetation profile and image interpretation provides information on:
 - Actual and previous use of the land
 - Potentially “abandoned land”
- Scenario:
 - This **land** was detected through the **heatmap** as **potentially unused** since **2009**
 - If the unused land status is confirmed on-site and the sustainability criteria are verified, **measures** to re-start cultivation in 2021 could lead to the production of **low LUC risk feedstocks**



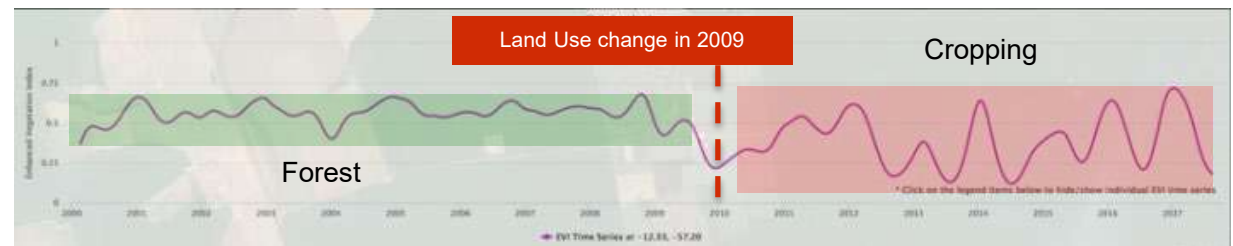
The analysis of the EVI time series indicates the exact time of the land use change and the type of land cover before and after the conversion



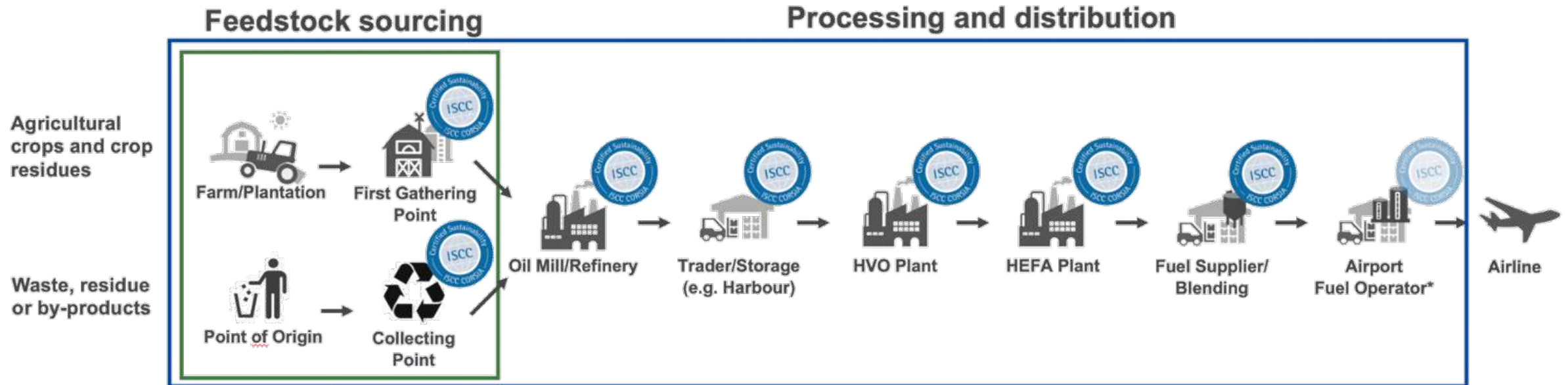
Field 1: Conversion from forest to cropland **before** 2008



Field 2: Conversion **after** 1 January 2008



Reduced audit effort and cost applies to downstream operators in the ISCC systems. Credit transfer options reduce transport costs and related emissions



On the level of biomass production, **sustainability, traceability and GHG** requirements are checked

In the downstream supply chain, only **traceability and GHG** requirements are checked



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Thank you for your attention!

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