Sustainability Certification of Alternative Aviation Fuels

ISCC System GmbH

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Content

ISCC is a global sustainability certification scheme governed by multi-stakeholder initiative with currently approx. 90 members

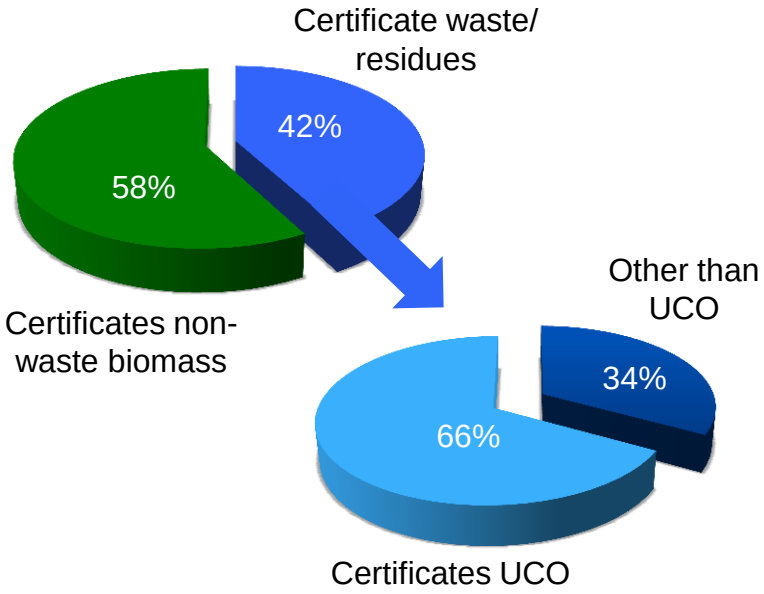
Members (Selection)

ISCC certification is being used in more than 100 countries for all types of agricultural, forestry and alternative raw materials and products

- Camelina
- Canola/ Rapeseed
- Cereal
- Corn
- Palm
- Shea
- Soy
- Sugarbeet
- Sugarcane
- Sunflower
- Waste & Residues
- Wood

ISCC is internationally acknowledged and well-established. Moreover it is the leading certification scheme for waste and residues

- One of the first sustainability certification systems recognized by the European Commission in 2011. Re-recognized in 2016
- Currently, more than 3,000 system users
- Large volumes of low GHG emissions biofuel (e.g. from waste and residues)
- Advanced biofuels and no-iLUC biofuels addressed
- Innovative technologies for land use change assessments
- Smallholder projects ongoing
- Comprehensive competencies in GHG emissions analysis



ISCC for alternative aviation fuels

- ISCC for camelina based HEFA used by Lufthansa
- Large certified feedstock basis available (agriculture, forestry, waste and residues)
- Certification of No LUC and No ILUC fuels
- Certification of new agricultural production systems (silvopasture), degraded land and non-biodiverse grassland
- Co-processing addressed
- Major fuel producers members of ISCC and active users of the system (e.g. BP, Shell, Total, Neste, ENI, Petrobras, GEVO)
- ISCC member of aireg (Aviation initiative for biofuels in Germany)

ISCC certified producers comply with a set of ecological and social criteria. Traceability is secured along the whole supply chain

Mandatory controls

At plantation, farm or forest management unit:

Along the supply chain:

ISCC defines six principles for the sustainable cultivation of biomass

PRINCIPLE 1

Zero deforestation

Protection of primary forests, high carbon stock areas, peat- and wetlands, protected areas and highly biodiverse areas

PRINCIPLE 2

Good agricultural practice

Agricultural and forestry production shall protect soil, water and air and ensure a sustainable use of land

PRINCIPLE 3

Safe working conditions

Ensure workers health and safety during work. Improve competence and knowledge via training

PRINCIPLE 4

Social conditions

Ensure good labor conditions and limit impacts to surrounding communities

PRINCIPLE 5

Compliance with laws

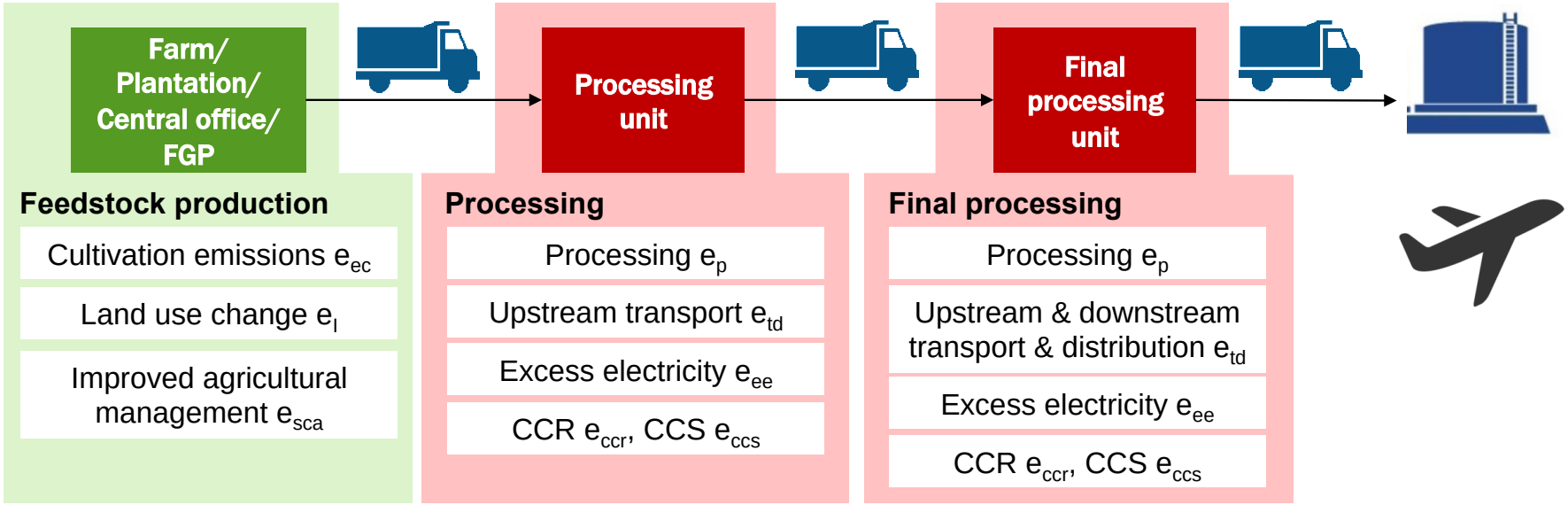
Comply with all regional and national laws and international treaties

PRINCIPLE 6

Good management practices

Recording system and compliance of subcontractors

Certification of supply chain with mass balance / segregation. Many biofuels producers apply actual GHG calculations instead of using defaults



ISCC uses GRAS for risk analysis and land use change verification based on satellite images

GRAS
Global Risk Assessment Services

With GRAS sustainability can be checked from your desktop

Web-Tool

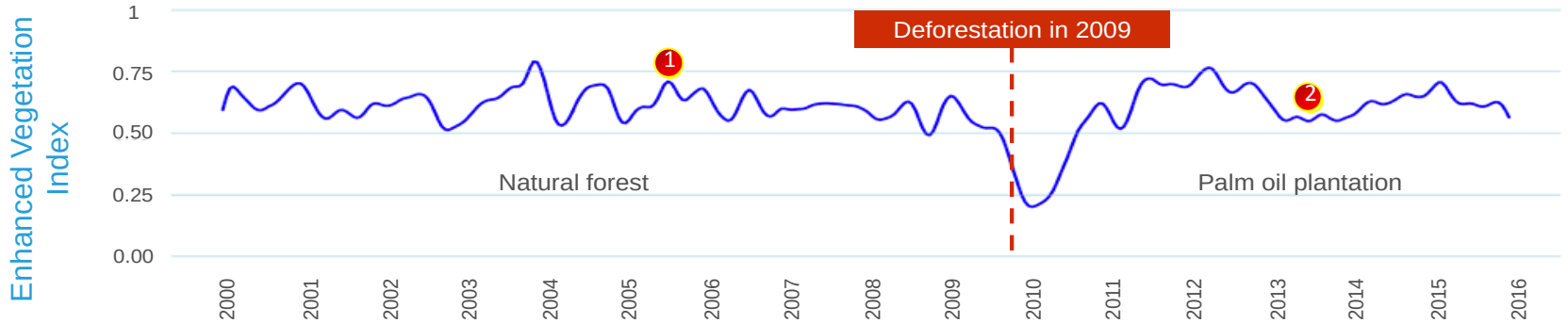
Biodiversity

Land Use Change

Carbon Stock

Social Indices

Based on algorithms implemented, GRAS can recognize if, where and when direct land use change has taken place



ISCC has a comprehensive methodology for GHG emission calculations and develops calculation models for emerging technologies

1070.6 kg CO_2e/t product

CH_4 from POME treatment

Ventilation

Solid separation

Algae

Co-composting

Closed ponds and flaring off

Example Palm

0 kg CO_2e/t product

Oil mill (without methane capture)

GHG emission reduction

Oil mill (with methane capture)

ISCC carries out GHG emission measurements in the field to support actual calculations

Malaysia, January 2017

Methane-measurements for reduction of GHG emissions of palm oil based biofuel

Conclusions to facilitate the deployment of alternative fuels for aviation

- Using existing schemes will help to make **commercial volumes** available. It also reduces the burden on companies in the supply chain and will increase acceptance
- A level playing field for all players in the market is required. **Critical issues** are related to waste and residues, actual GHG calculations (e.g. emission factors) and land use change
- **Direct land use change** can be adequately covered with new transparency and monitoring technologies in certification systems
- Addressing **Indirect land use change** with adding a crop specific ILUC factor to the GHG emissions of a fuel requires more research. Risks and costs for the aviation industry will increase while it is doubtful that the ILUC factor will contribute to decreasing deforestation
- Finally: If you want to learn more about ISCC and ISCC for aviation fuels: visit the **7th ISCC Global Sustainability Conference** in Brussels on February 15, 2017 (www.iscc-system.org)

Many thanks for your attention!

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