Verification of CI and Prevention of Land Use Change in Global Biofuel Supply

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Without secure verification of carbon intensity (CI) and prevention of land use change (LUC) low carbon fuel policy is at risk

**Carbon intensity:**
- CI values might not reflect reality with respect to
  - Feedstock
  - Process
  - Supply chain

**Land use change**
- Cutting or burning down of rainforests
- Loss of land with high biodiversity value or high carbon stocks
- High impact on CI, which can easily become negative
ISCC verifies key drivers of the CI number throughout the supply chain – Example ethanol

### CI driver: type of feedstock
- Sugar cane ethanol
- Waste-based ethanol
- Corn ethanol

### CI driver: process
- Corn ethanol with biomass as process energy
- Corn ethanol with biomass and CCR

### CI driver: land use change
- Ethanol with LUC prohibited under ISCC
- Ethanol with sustainable LUC (degraded land to sugar cane)

All figures are examples only.
Low carbon fuels policy must protect no go areas and verify the type of LUC
ISCC verifies individual GHG calculations. Verification takes place at the supply chain element where emissions occur.
Based on a defined methodology, ISCC guidance and specific on-site situation, companies conduct their CI calculations.

### Guarantee successful audit
- Specific calculator based on individual setup
- Calculation according to ISCC methodology
- Fully transparent calculation
- Easy to update
- All data sources, evidence, references, literature documented
- Usable for certification audit

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### Greenhouse gas (GHG) emission calculation for the production of bioethanol (fermentation and distillation)

#### Address
- Name
- Street, Number
- Postal Code, City
- Contact person

#### Production capacity bioethanol

<table>
<thead>
<tr>
<th>Source</th>
<th>Bioethanol production</th>
<th>12,100,000,0</th>
<th>L/annum</th>
</tr>
</thead>
</table>

#### Waste yeast

<table>
<thead>
<tr>
<th>Source</th>
<th>Waste yeast</th>
<th>200,0</th>
<th>t/annum</th>
</tr>
</thead>
</table>

#### Other wastes

<table>
<thead>
<tr>
<th>Source</th>
<th>Other wastes</th>
<th>365,659,0</th>
<th>L/annum</th>
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</table>

#### Raw material

<table>
<thead>
<tr>
<th>Source</th>
<th>Raw material</th>
<th>628,283</th>
<th>t/annum</th>
</tr>
</thead>
</table>

#### Conversion factor

<table>
<thead>
<tr>
<th>Source</th>
<th>Conversion factor</th>
<th>19,26</th>
<th>L Ethanol/ t raw material</th>
</tr>
</thead>
</table>

#### Emissions related to raw material

<table>
<thead>
<tr>
<th>Source</th>
<th>Emissions related to raw material</th>
<th>0,00</th>
<th>kg CO₂e/ annum</th>
</tr>
</thead>
</table>

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Source: Meo Carbon Solutions GmbH
Specific situation on the ground – example palm oil mill
ISCC provides procedures and tools for secure CI verification. This can also be input to CI pathways

- ISCC ensures a level playing field with respect to GHG calculations and CI numbers reported
- ISCC GHG Training for auditors and system users
- Mandatory audit procedures, guidance, verification and reporting requirements to be used by auditors
- Auditors need to verify GHG calculation prior to the audit
- ISCC Integrity Program:
  - Upfront GHG verification by ISCC GHG experts
ISCC uses GRAS for sustainability risk analysis and the detection of land use change.
Example canola: GRAS can identify the conversion from forest or grassland to cropland in a buffer area around farmhouse.

10 km radius

Farmhouse

Sentinel-2, 2016

SPOT, 2007

Grassland

Cropland

Grassland conversion

Deforestation

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Example palm oil: GRAS can clearly identify replanting activities and does not show those as deforestation.
Many thanks for your attention!

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