Implementing New GHG Requirements under the RED in Europe

Las Vegas, 5 December 2017
Dr Jan Henke, ISCC System GmbH
Greenhouse gas savings are a core driver for increasing biofuel mandates around the globe

- E5, B2
- Longer term plans similar to LCFS*
- Development of CI-based clean fuel programs in Western states
- RFS2 no timelines beyond 2022
- B2, B9, E10, B10 by region
- Ethanol blending: 2022: 30% 2030: 40%
- B10, E12
- 10% renewable energy in transport in 2020
- RED II targets still discussed
- 11 provinces blending E10
- Rest to follow by 2020
- Ethanol: 2-3%
- Struggling to hit B20, 30% by 2020
- E2, rising to E5 by 2020%
- Struggling to hit B10
- 12% ethanol
- Planning E5 in 2018
- 10% ethanol
- B3 in 2018
- B5, E7.8
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Source: For more information on developments in global mandated renewable fuel demand, contact Matthew.Stone@prima-markets.com

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In Europe CI performance becomes more relevant due to thresholds and GHG quotas – latest updates on GHG saving requirements

Renewable Energy Directive (RED)  
2015/1513/EC from 2015

GHG saving requirements for biofuels:
- 35% for existing installation until Dec 2017
- 50% from 1 Jan 2018
- 60% for new installations directly

Fuel Quality Directive (FQD)  
2015/1513/EC from 2015

% GHG saving compared to fossil fuel

- 60% until 5 Oct. 2015
- 50% after 5 Oct. 2015
- 35% until 2017
- 50% from 1 Jan 2018
- 60% for new installations directly
Clear and secure forwarding of sustainability information is key to high quality certification and low carbon fuel policies.

**Sustainability information forwarded through supply chain:**
- Sustainability of the feedstock (sustainable vs. non-sustainable)
- Waste or residue status of the feedstock
- **Carbon intensity number for all production steps**
- Country of feedstock origin
- Type of feedstock

Sustainable products and claims can be traced back to their origin in a step by step approach under ISCC.
ISCC provides full traceability along the supply chain. This enables forwarding of CI data.

Site specific certificates are issued upon successful certification audit. Each player can source sustainable products from any certificate holder.
Audited CI information is forwarded through the entire supply chain – from farm to final market in a stepwise approach.
The Note from the EU Commission changed the GHG methodology tremendously*

**GHG Note from the Commission**

1. Information transfer of individual GHG calculation formula elements along supply chain
2. Calculate and forward GHG value per dry-ton matter
3. Feedstock factor
4. Specification on CCR, CCS, and methane capture
5. Requirements on competences of auditors
6. Third country reports with typical cultivation emissions
7. …

* The EC has communicated that implementation is mandatory by end of August 2017 for all voluntary schemes whose recognition will have been extended by then (ISCC EU, RSB EU RED, 2BSvs, Bonsucro EU, RedCert EU, Ensus, Red Tractor, NTA 8080).
All supply chain elements must report the respective components of the GHG calculation formula. Calculation and values must be audited.

\[ E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} - e_{sca} - e_{CCS} - e_{CCR} - e_{ee} \]

Source of formula: EU RED
Different options for producers are available to provide the GHG emission information

1. Use of total default values

2. Use of disaggregated default values

3. Use of actual values (Individually calculated values)*

4. Combination of use of disaggregated default value and actual value

* Or for cultivation also NUTS2 values/ “NUTS2 equivalent values” for third countries (in kg CO2eq per dry-ton product).
New requirements to forward CI data – Example: Combination of the use of disaggregated default value and actual value

SD for crop: “Disaggregated default value for $e_{ec}$”

SD for product: “Disaggregated default value for $e_{ec}$ and $e_{td}$”
$e_p$ in kg CO$_2$eq/t$_{dry}$

SD for biofuel: $e_{ec}$ in g CO$_2$eq/MJ
$e_p$ in g CO$_2$eq/MJ
$e_{td}$ in g CO$_2$eq/MJ
$E$, GHG-%

Farm/Plantation/Central office/FGP → Processing unit → Final processing unit
New feedstock factor must be used: Different calculation approaches for intermediates and final biofuels

1. Use of mass based Feedstock Factor for Intermediates

\[ \text{FF}_{\text{intermediates}} = \frac{\text{Ratio of dry feedstock required to make 1 ton dry intermediate product}}{\text{FF}} \]

2. Use of Energetic Feedstock Factor for Final Biofuels

\[ \text{FF}_{\text{biofuel}} = \frac{\text{Ratio of MJ feedstock required to make 1 MJ biofuel}}{\text{FF}} \]
Third countries can submit to the Commission reports with data on typical emissions from cultivation of feedstock

GHG Note from the Commission

- Member States or of 3rd countries may submit reports with typical cultivation emissions
- Third country reports are treated similar to “NUTS2”-reports from EU Member States
- Values need to be reported in kg CO$_2$eq/dry-ton feedstock
- ISCC allows system users to use those values as alternative to actual GHG values for cultivation
ISCC offers methodologies, tools and verification guidance to facilitate reliable GHG calculations.
Detailed guidance from certification systems to the certification bodies and auditors is key for a secure verification.

- Procedures contain chapters on Basic Data, Management System, Traceability, Mass Balance and GHG Emissions.
- Sub-chapters contain requirements that are only relevant for specific types of operations.
- Chapters or Sub-chapters that are not relevant for the audited operation do not need to be completed.
In the basic template of the procedure, the specific processing emissions must be reported.

<table>
<thead>
<tr>
<th>No.</th>
<th>Requirements</th>
<th>Verification guidance</th>
<th>Evidence/ Documents</th>
<th>Findings</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.8</td>
<td>Have GHG emissions of the upstream transport from the supplier to the company been correctly calculated?</td>
<td>Verify whether transport emissions have been correctly calculated</td>
<td>Transparent documentation of calculations and results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.9</td>
<td>What type of GHG value is used for the incoming material?</td>
<td>Verify that the values are in kgCO2e per ton of product. Verify whether the input material fits into the category from which the disaggregated default value was chosen. Especially relevant for: - Non-EU corn (no default available) - EU crops (NUTS2 compliance must be guaranteed) If the input materials do not fulfill one of the constraints, the usage of the disaggregated default value is not possible. If NUTS2 values are used, verify the location of agricultural production and whether for agricultural production, the correct NUTS2 value for that location or the highest NUTS2 value for the whole member state has been used.</td>
<td>Documentation GHG value. Compare value with Directive 2009/29/EC values or respective ISCC list. Compare with NUTS2 report of member state and respective NUTS2 value, which is applicable for feedstock.</td>
<td>Documentation GHG value.</td>
<td></td>
</tr>
<tr>
<td>5.1.10</td>
<td>In case of individual calculation of own processing emissions: What is the emission value for processing emissions?</td>
<td>Indicate only the PURE PROCESSING EMISSIONS for the main product. Pure procssing emissions satisfy the following: 1. Upstream emissions are not included (i.e. emissions of the incoming raw material, emissions from upstream transport). 2. Emissions are allocated to the main product (e.g. if the processing unit is an oil mill producing crude oil and meal, only emissions allocated to the crude oil must be included).</td>
<td>Indicate the emissions from processing: ____ kg CO2eq/ton main product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.11</td>
<td>Is the individual calculation of process GHG emissions up to date and based on consistent data?</td>
<td>Verify if the time period of the calculation is clearly defined and covers 12 months. Verify if the time period of the data used for the calculation is consistent with the calculation period. If certain input data up to date values are not available, older data can be used if still representative. The GHG calculation shall be as up to date as possible and represent the previous 12 months (if possible). If the calculation does not represent the previous 12 months, the maximum deviation shall be continuously reduced to achieve a maximum deviation of two months.</td>
<td>GHG calculation: Indicate for each period the allocated portion of the emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.12</td>
<td>Have conversion factors been correctly calculated, so that emissions of incoming raw material can be converted to emissions of products?</td>
<td>Verify whether the following input data has been gathered correctly on-site and is plausible: - Calculation period - Amount of main product produced in calculation period - Amount and type of raw material consumed during</td>
<td>Reporting of incoming and outgoing material, conversion rates, delivery documents, process description</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The ISCC Audit Procedure System (APS) - an automated audit procedure for all types of operations

What is APS?

- Electronic tool facilitating the certification process
- Intelligent way of conducting audits
- Simplifies the audit preparation
- Contributes to more efficient audit performance
Based on latest RED methodology and certification requirements GHG calculators can be set up

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

<table>
<thead>
<tr>
<th>General data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Street, Number</td>
<td></td>
</tr>
<tr>
<td>Postal Code, City</td>
<td></td>
</tr>
<tr>
<td>Contact person</td>
<td></td>
</tr>
<tr>
<td>Production capacity bioethanol</td>
<td></td>
</tr>
<tr>
<td>Time period of data input</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Emissions related to raw material</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production main product</td>
<td>Source</td>
</tr>
<tr>
<td>Bioethanol production</td>
<td>12.100.000,0 L/annum</td>
</tr>
<tr>
<td>Production by-product</td>
<td></td>
</tr>
<tr>
<td>No by-products</td>
<td></td>
</tr>
<tr>
<td>Production waste and residues</td>
<td>Source</td>
</tr>
<tr>
<td>Waste yeast</td>
<td>200,0 t/annum</td>
</tr>
<tr>
<td>Other wastes</td>
<td>365.659,0 L/annum</td>
</tr>
<tr>
<td>Main raw material</td>
<td>Source</td>
</tr>
<tr>
<td>Raw material</td>
<td>628.283 t/annum</td>
</tr>
<tr>
<td>Greenhouse gas value of raw material</td>
<td>0,0 kg CO₂e/t</td>
</tr>
<tr>
<td>Conversion factor</td>
<td>19,26 L Ethanol/l raw material</td>
</tr>
<tr>
<td>Emissions related to raw material</td>
<td>Source</td>
</tr>
<tr>
<td>Raw material</td>
<td>0,08 kg CO₂e/L Bioethanol</td>
</tr>
</tbody>
</table>

Source: Meo Carbon Solutions GmbH

Guarantee successful audit

- Specific calculator based on individual setup
- Calculation according to RED methodology
- Fully transparent
- Easy to update
- All data sources, evidence, references, literature documented
- Usable for annual certification audits
Certification process and GHG calculation for wastes/residues is much simpler compared to products/co-products

**FFAs as co-product: Regular ISCC certification process**

1. **Oil Crop**
   - Farm Plantation
   - First Gathering Point
   - Oil Mill / Refinery
   - Biofuel producer
   - Quota obligated party

**FFAs as residue: ISCC EU w/r process**

1. **Oil Crop (co-product)**
   - No upstream certification
   - No upstream GHG emissions
   - No traceability

2. **Oil Mill / Refinery = Point of origin**
   - Collecting Point / Biofuel producer
   - Quota obligated party
ISCC maintains a “list of materials” (including waste and residues)

- Official classifications taken into account (Member State lists, national laws and RED)

- Materials which are not on the list cannot be certified:
  - ISCC to be contacted
  - Evidence shall be provided that the material is officially recognized and accepted as waste/residue in a MS

- Also non waste/residue material must be listed prior to certification
Sometimes case-by-case decisions are required and the decision tree, reflecting also the waste hierarchy must be used

1. Was the material deliberately produced?
   - YES
   - NO

2. Is a further use of the material certain (other than bioenergy)?
   - YES
   - NO

3. Can the material be used directly without any further processing other than normal industrial practice?
   - YES
   - NO

4. Is the material produced as an integral part of the production process?
   - YES
   - NO

5. Is the further use of the material lawful in the sense of Article 5 (1) lit. (d) WFD?
   - YES
   - NO

**Product**

- „Regular“ ISCC certification process (including certification up to the farm level)

- (Non-waste) Co-product

**Waste / Processing residue**

- ISCC EU w/r process can be applied (no upstream certification required)

Thank you for your attention!

Contact

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