

SSAP/RED Protocol

**SOYBEAN SUSTAINABILITY ASSURANCE PROTOCOL /RENEWABLE ENERGY DIRECTIVE**

**SSAP/RED**

(SSAP/RED Protocol)

Document to be used by SSAP/RED system users

DEC 2023

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| Summary of changes made in Version 4 | Chapter |
| *General wording:* All reference with regard to the RED was changed to the Renewable Energy Directive (EU) 2018/2001 (recast) (also referred to as RED II) |  |
| *Update:* Reference from Article 17 RED to Article 29 RED II |  |
| *Update: Reference from Article 18 RED to Article 30 RED II* |  |
| *Adjustment*: Definitions and requirements as per Article 29 of RED II (rewording of full chapter) | 1 |
| *Addition:*  USDA’s Natural Resources Conservation Service database shall be used to assess if land in scope of certification has been grassland after this cut-off date. This can be found trough the [RCA Data Viewer](https://protect-de.mimecast.com/s/FimVCXQyOJTGgom5Imx5NL?domain=nrcs.usda.gov), and through this direct link: [RCA DV Land Use by State NRI 2017 1 (usda.gov)](https://publicdashboards.dl.usda.gov/t/FPAC_PUB/views/RCADVLandUsebyStateNRI20171/StateLandUseTrend?%3Adisplay_count=n&%3Aembed=y&%3AisGuestRedirectFromVizportal=y&%3Aorigin=viz_share_link&%3AshowAppBanner=false&%3AshowVizHome=n), or the most recent version.  The Data Viewer has a menu entitled “Land Type” and select “Grazing Land.” It shows that in 2007 there were 523 million acres of Range and Pasture. In 2017, there were 521 million acres – a net loss of 2 million acres. This indicates a decline in grazing land in the US over that 10 years of time, but it is relatively small, and indicates limited risk for SSAP/RED system users to be part of this decline. It has to be said that the EU grassland definition is wider and includes “herbaceous or shrub vegetation for at least 5 years continuously […] meadows or pasture that is cropped for hay”.  According to this definition and the dis-alignment with how data in the US is collected, one can include land under the US [Conservation Reserve Program (CRP) (usda.gov)](https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index) in the last half of the 10-year CRP contract as meeting the EU’s grassland definition. At the end of February 2023 there were a little over 23 million acres in the CRP, most of which would be in grass. Due to the statistical dis-alignment there is no specific data to compare, but also with a conservative approach, the U.S. has probably seen an expansion of grasslands rather than a contraction.  Taking the above information into account, the overall risk that soybeans are grown on land that used to have a highly biodiverse grassland status is limited, but where grassland is detected after the cut-off date, supporting the biodiversity status of the area should include:   1. Use the above described RCA Data Viewer to confirm none of the land was grassland after 1st of January 2008. If that cannot be confirmed, step 2 and 3 are required to assess compliance. 2. […] 3. Specific expertise of the NRCS / USDA shall be required to assess the land status was not in line with the above definition from Highly biodiverse grassland (Article 29 (3) d).   As an alternative to step 2 and step 3 above, the Economic Operator may decide to take the land with the US Grassland status out of the scope for SSAP/RED certification. | 1.1 |
| *Addition:* Mass balance  The main purpose of managing a mass balance system is to assure that SSAP/RED system users and any voluntary scheme system users downstream in the supply chain can assure compliance with Article 26 and 27 of the RED II | 3 |
| *Additions:*   * (a) […] for instance in a container, processing site, or logistical facility; * (b) allows consignments of raw material with differing energy content to be mixed for the purposes of further processing at the fuel production plant for the purpose of producing biofuels, bioliquids or biomass fuels, provided that the size of consignments is adjusted according to their energy content; * (c) […] and greenhouse gas emissions-saving […] * (d) […] This requires that the balance be achieved over an appropriate period of time. | 3.1 |
| *Addition:* 3.2 transferring sustainability characteristics (full section) | 3.2 |
| *Addition:* There are various options in maintaining a mass balance under RED II. Section 3.3.1 describes the two options that are required for traders. Section 3.3.2. sets less strict requirements that apply only for producers and FGPs. | 3.4 |
| *Addition:* 3.4.1. Requirements for Traders  […] allows the balance between incoming and outgoing products to be continuous in time, but with the assurance that the system foresees that at any point in time no more sustainable material has been dispatched compared to what has been received, meaning no deficit occurs. Alternatively, the regulation  [...]periodical approach, a deficit may occur, meaning that […]  *Addition:* 3.4.2 requirements for first gathering points (full section) | 3.4 |
| *Addition:* 3.5 Mass balance audit requirements (full section) | 3.5 |
| *Addition:* […] The system user must provide the full audit reports and may be obliged to request these reports with its previous CB. […] | 4 |
| *Addition:* […] Land use change emissions ((el) if relevant), […]  *Deletion:* eee emission saving from excess electricity from cogeneration.  *Addition:* […] Also, the two last elements “emission saving from carbon capture and geological storage” and “emission saving from carbon capture and replacement” are not included as they are not relevant for the system users of SSAP/RED. The soybean exporter must declare GHG emission values for Cultivation and Transport & Distribution. Declaring land use change emissions is only required when land use changes have occurred. In line with Article 29(10) from RED II, SSAP/RED ensures that operators deliver accurate data on GHG emissions of soybeans produced for biofuels and bioliquids. The “emission saving from soil carbon accumulation via improved agricultural management” [...] can therefore not be taken into account. A separate guidance document on such calculation may be published in the future.  *Addition:* Table 1:  Biofuel and bioliquids production: installation in operation after 1 January 2021  65% Minimum savings potential  *Adjustment:* Values in Table 2: Emission values for fossil references   |  |  | | --- | --- | | Biofuel/bioliquid end use purpose | Reference value | | Biofuels for transport | **94** g CO2eq/MJ fossil fuel | | Bioliquids used for electricity production | **183** g CO2eq/MJ fossil fuel | | Bioliquids used for the production of heating and cooling | **80** g CO2eq/MJ fossil fuel |   *Addition:* As SSAP/RED has no processing in its audit and certification scope, auditing of the date of operation of final processing facilities and their compliance towards the saving targets is not directly in the scope of SSAP/RED. However, SSAP/RED system users must assure that the GHG emissions for the relevant supply chain elements, at a minimum cultivation and transport and distribution, can be accepted by operators downstream the supply chain.    *Addition:* […]as per the methodology of RED II Annex V (C). | 5.1 |
| *Addition:* In accordance with Article 31(4) of Directive […] of this document. | 5.1 |
| *Addition:* The calculation methodologies described in this Protocol refer to the following methodologies in RED II:   1. Only actual values   a) Actual values shall be calculated in accordance with the methodology laid down in Annex V (C) for biofuels and bioliquids.   1. A combination of applicable disaggregated default values and actual values according to one of below description:   Values calculated as the sum of the factors of the formulas referred to in point 1 of Annex V (C), where disaggregated default values in Annex V (D) + (E) may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Annex V (C), are used for all other factors  *Addition:* iii) Every SSAP/RED system user must submit its actual GHG calculation a minimum of two weeks prior to the annual audit to the CB for desk review. The GHG calculation includes input data and any relevant evidence, information on the emission factors, standard values applied, and reference sources. In case the desk review or the audit itself results in changes or updates of the calculation the final version needs to be resubmitted. | 5.2 |
| *Addition:* various cross references to Annex IV of this document for more clear alignment with the Annex VII of the implementing regulation | 5.2 |
| *Addition:* N2O Emission calculation  In line with Annex VII section 1.5 of the Commission's Implementing Regulation, the calculation of N2O emissions from managed soils shall follow the IPCC methodology. The use of disaggregated crop-specific emission factors for different environmental conditions (corresponding to Tier 2 of the IPCC methodology) shall be used to calculate the N2O emissions resulting from crop cultivation. Specific emission factors for different environmental conditions, soil conditions and different crops should be taken into account. Economic operators could use validated models to calculate those emission factors provided that the models take these aspects into account. In line with the IPCC guidelines2 , both direct and indirect N2O emissions shall be taken into account. The GNOC tool shall be used, which is based on the formulas below, following the naming conventions in the IPCC (2006) guidelines:  N2Ototal−N = N2Odirect − N + N2Oindirect – N  Where:  For mineral soils: N2ODirect−N = [(FSN + FON) • EF1ij] + [FCR • EF1]  For organic soils: N2ODirect−N = [(FSN + FON) • EF1] + [FCR • EF1] + [(FOS,CG,Temp • EF2CG, Temp] + [FCROS,CG,Trop • E2CG,Trop]  For both mineral and organic soils: N2ODirect−N = [((FSN • FracGASF) + (FON • EracGASM) • EF4] + [(FSN +FON + FCR) • FracLeach-(H) • EF5] | 5.2.1. |
| *Addition:* 5.2.2 Annualised emissions from carbon stock changes caused by land-use change (full section) | 5.2.2. |
| *Deletion: Calculation formula 1 and all its relevant descriptions* | 5.2.3. |
| *Deletion:* 7 Compliance Table SSAP/RED Directives – RED (full chapter) | 7 |
| *Addition:* Outermost Regions  Outermost regions have a specific situation which has been addressed in the RED II, referring to Article 349 TFEU. The energy sector in the outermost regions is often characterised by isolation, limited supply, and dependence on fossil fuels while those regions benefit from significant local renewable sources of energy. The outermost regions could thus serve as examples of the application of innovative energy technologies. For SSAP/RED, this definition is mainly relevant for cases where soybeans could be used for electricity generation. If this happens in outermost regions, the emissions can be calculated against a higher fossil fuel comparator, resulting in a better saving value. | Annex I |
| *Updated the emission factors* in line with Annex IX of the Implementing Regulation | Annex III |
| *Addition: (if available and recognised by the European Commission)* | Annex IV |

# **Introduction and Scope**

The more than 300,000 American soybean producers apply the principles of sustainability every day. Their production adheres to the U.S. federal, state, and local laws and regulations, implemented using the best agricultural production practices.

The U.S. Soybean Sustainability Assurance Protocol/RED (SSAP/RED), hereinafter referred to as the ”Protocol” has originally been developed to demonstrate compliance with the requirements of the European **R**enewable **E**nergy **D**irective 2009/28/EC (RED) and its relevant EC Communications and Regulations. When SSAP-RED is mentioned in this document, it refers to the updated version of the program, revised in accordance with the stipulations of the recast Renewable Energy Directive 2018/2001/EU (RED II) which entered into force in December 2018 and which is to be transposed into national law by EU Member States by 30 June 2021.

Therefore, the SSAP/RED describes the regulations, processes, and management practices that ensure both sustainable soybean production in compliance with the requirements of the RED II as well as to all relevant U.S. laws and regulations. The SSAP/RED forms part of the overall U.S. soybean producer sustainability program which includes a national monitoring and measurement system of positive environmental outcomes by producers.

**Scope:**

The applicable feedstock is soybeans cultivated in the United States for the production of biodiesel in the European Union. **Soybean waste and residual streams are excluded.** This scheme does not include ligno-cellulosic and non-food cellulosic material or the production of biogas fuels and biogas. The Chain of Custody coverage is the cultivation stage and transport to the First Gathering Point only, without having an option for individual farm or farm group certification. Neither soybean processing steps nor the use of waste/residues are covered in this scheme.

# **Objective**

The aim of this voluntary scheme is to ensure that the certified soybeans meet the requirements of the European RED II so that those soybeans can be used as feedstock for the production of RED II compliant biomass, bioliquids, and biofuels. The products are defined as below:

**Biomass** is defined as the biodegradable fraction of products, waste, and residues from biological origin from agriculture (including vegetal and animal substances), and forestry, and related industries including fisheries and aquaculture as well as the biodegradable fraction of industrial and municipal waste.

**Bioliquids** are defined as liquid fuel produced from biomass to be used for energy purposes other than for transport, including electricity and heating and cooling.

**Biofuels** are defined as liquid or gaseous fuel from transport produced from biomass.

Additional terms used in this document are defined in Annex I of the Glossary. Where this document refers to specific U.S. laws and regulations, these details are referenced in Annex II.

# **Chapter 1: Sustainability Requirements**

## **Introduction**

The SSAP/RED sustainability requirements are based on the national program SSAP (U.S. Soybean Sustainability Assurance Protocol) which consists of the following four PILLARs:

**PILLAR 1:** Biodiversity and High Carbon Stock Production Control Measures and Regulations

**PILLAR 2:**  Production Practices Control Measures and Regulations   
**PILLAR 3:**  Public and Labor Health and Welfare Control Measures and Regulations   
**PILLAR 4:**  Continuous Improvement of Production Practices and Environmental Protection Control Measures and Regulations

This section describes how the RED II requirements are reflected in the above PILLARs while outlining the of the RED II requirement content. All aspects as being required by the RED II are referred to **in bold**.

## **PILLAR 1: BIODIVERSITY AND HIGH CARBON STOCK PRODUCTION CONTROL MEASURES AND REGULATIONS**

Soybeans are produced only on existing agricultural land as defined in CFR Title 40 Part 80 Subpart M 80.1401 as cropland, pastureland, primary forest, and land enrolled in the Conservation Reserve Program that was cleared or cultivated prior to December 19, 2007, and that, on December 19, 2007, was non-forested and actively managed as agricultural land, as evidenced by records traceable to the land in question.

For the specific purpose of demonstrating compliance with the land use requirements of **Article 29** of the RED II and subsequent Commission communications and regulations, it is required that soybeans will not be produced in the following areas:

* 1. Soybeans are not produced on land with a high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status:
     1. Highly biodiverse grassland (**Article 29 (3) d**) spanning more than one hectare defined as a terrestrial ecosystem dominated by herbaceous or shrub vegetation for at least 5 years continuously, including meadows and pasture that is cropped for hay but excludes land cultivated for other production and cropland lying temporarily fallow and grassland that is:
     2. natural, namely grassland that would remain grassland in the absence of human intervention (defined as managed grazing, mowing, cutting, harvesting, or burning) and that maintains the natural species composition and ecological characteristics and processes; or
     3. non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority,

unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland. Based on the risk assessment conducted by the Certification Body (CB), the lead auditor must judge whether an assessment of the status of the land as highly biodiverse grassland is necessary. A qualified independent specialist must conduct this assessment, as described in Chapter 5 of the SSAP RED Governance.

Article 16 of the Implementing regulation describes the requirements for auditing of natural and non-natural highly-biodiverse grassland.

Where land remains grassland, or would have remained grassland in the absence of human intervention, and is located in any of the geographic ranges listed in Regulation (EU) No 1307/2014, it shall be considered as natural, highly biodiverse grassland. The aforementioned Regulation stipulates that grasslands in the following geographic ranges of the European Union shall always be regarded as highly biodiverse grassland:

(1) habitats as listed in Annex I to Council Directive 92/43/EEC (1);

(2) habitats of significant importance for animal and plant species of Union interest listed in Annexes II and IV to Directive 92/43/EEC;

(3) habitats of significant importance for wild bird species listed in Annex I to Directive 2009/147/EC of the European Parliament and of the Council (2).

Highly biodiverse grassland in the European Union is not limited to the geographic ranges referred to under (1), (2) and (3) of this Article. Other grassland might fulfil the criteria for highly biodiverse grassland as well. In order to comply to the above EU requirements, the assessment of grassland in the US, for the purpose of SSAP/RED compliance, shall be assessed in line with these requirements.

For land that is located outside the areas referred to in (2) of this article, the auditor shall assess whether the grassland maintains, or would have maintained in the absence of human intervention, the natural species composition and ecological characteristics and processes. Where that is the case, the land shall be considered as being, or having been, natural, highly biodiverse grassland. Where grassland has already been converted to arable land and it is not possible to assess the characteristics of the land itself through information available from the national competent authorities or satellite imagery, the auditor shall consider such land as not having been highly biodiverse grassland at the moment of conversion.

Where the land ceased, or would have ceased in the absence of human intervention, to be grassland, is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, then the land shall be considered as non-natural, highly biodiverse grassland.

Any land that is, or was, non-natural, highly biodiverse grassland in or after January 2008 may be used for fuels production on condition that harvesting of the raw material is necessary to preserve the status of the grassland as highly biodiverse grassland and that current management practices do not present a risk of causing biodiversity decline of the grassland.

In line with Article 16 of the Implementing Regulation, SSAP/RED system users shall provide appropriate evidence for the auditor to assess verifying whether land is/has been highly biodiverse grassland since the cut-off date of 1st of January 2008 as referred to in Article 29(3), point (d), of the RED II.

There are different databases available about geographic ranges of highly biodiverse grassland. As an explanatory reference: in the EU, the Commission Regulation (EU) No 1307/2014 refers to Council Directive 92/43/EEC and Directive 2009/147/EC of the European Parliament and of the Council. The Natura 2000 database (http://natura2000.eea.europa.eu) provides this information for the EU member countries. For countries outside the EU, auditors and experts may use global databases (e.g. WDPA, IBAT), or country-specific databases.

If the grassland has already been converted and visual inspection is not possible during the initial audit, it is the responsibility of the company or operator commissioning the assessment to provide sufficient evidence that the grassland did not qualify as highly biodiverse at the time of conversion.

USDA’s Natural Resources Conservation Service database shall be used to assess if land in scope of certification has been grassland after this cut-off date. This can be found trough the [RCA Data Viewer](https://protect-de.mimecast.com/s/FimVCXQyOJTGgom5Imx5NL?domain=nrcs.usda.gov), and through this direct link: [RCA DV Land Use by State NRI 2017 1 (usda.gov)](https://publicdashboards.dl.usda.gov/t/FPAC_PUB/views/RCADVLandUsebyStateNRI20171/StateLandUseTrend?%3Adisplay_count=n&%3Aembed=y&%3AisGuestRedirectFromVizportal=y&%3Aorigin=viz_share_link&%3AshowAppBanner=false&%3AshowVizHome=n), or the most recent version.

the Data Viewer has menu entitled “Land Type” and select “Grazing Land.” It shows that in 2007 there were 523 million acres of Range and Pasture. In 2017, there were 521 million acres – a net loss of 2 million acres. This indicates a decline in grazing land in the US over that 10 years of time, but it is relatively small, and indicates limited risk for SSAP/RED system users to be part of this decline. It has to be said that the EU grassland definition is wider and includes “herbaceous or shrub vegetation for at least 5 years continuously […] meadows or pasture that is cropped for hay”.

According to this definition and the dis-alignment with how data in the US is collected, one can include land under the US [Conservation Reserve Program (usda.gov)](https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index) in the last half of the 10-year CRP contract as meeting the EU’s grassland definition. At the end of February 2023 there were a little over 23 million acres in the CRP, most of which would be in grass. Due to the statistical dis-alignment there is no specific data to compare, but also with a conservative approach, the U.S. has probably seen an expansion of grasslands rather than a contraction.

Taking the above information into account, the overall risk that soybeans are grown on land that used to have a highly biodiverse grassland status is limited, but where grassland is detected after the cut-off date, supporting the biodiversity status of the area should include:

1. Use the above described RCA Data Viewer to confirm none of the land was grassland after 1st of January 2008. If that cannot be confirmed, step 2 and 3 are required to assess compliance.
2. (historical) remote sensing imagery of the areas, including satellite or aerial photographs, land use maps or vegetation maps. High-resolution historic satellite or aerial photographs may be used to compare a site under assessment with reference areas in the region to provide an indicator if the land could be considered as highly biodiverse or not.
3. Specific expertise of the NRCS / USDA shall be required to assess the land status was **not** in line with the above definition from Highly biodiverse grassland (**Article 29 (3) d**).

As an alternative to step 2 and step 3 above, the Economic Operator may decide to take the land with the US Grassland status out of the scope for SSAP/RED certification.

* + 1. Primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity, and the ecological processes are not significantly disturbed **(Article 29 (3) a).**
    2. Producers are in compliance with U.S. laws prohibiting conversion of primary forests to other uses. Primary forests are defined as forest or wooded land of native species where there is no clearly visible indication of human activity, and the ecological processes are not significantly disturbed.
    3. Highly biodiverse forest and other wooded land which is species-rich and not degraded or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes **(Article 29 (3) b)**. The definitions of ‘degraded’ and ‘species-rich’ included in Commission Regulation (EU) No 1307/2014 shall be applied in the context of this criterion:

‘degraded’ that is to say as land is characterised by long-term loss of biodiversity due to for instance overgrazing, mechanical damage to the vegetation, soil erosion or loss of soil quality.

‘species-rich’, that is to say it is:

(I) a habitat of significant importance to critically endangered, endangered or vulnerable species as classified by

the International Union for the Conservation of Nature Red List of Threatened Species or other lists with a

similar purpose for species or habitats laid down in national legislation or recognised by a competent

national authority in the country of origin of the raw material; or

(II) a habitat of significant importance to endemic or restricted-range species; or

(III) a habitat of significant importance to intra-species genetic diversity; or

(IV) a habitat of significant importance to globally significant concentrations of migratory species or congregatory species; or

(V) a regionally or nationally significant or highly threatened or unique ecosystem

* + - 1. Producers are in compliance with U.S. laws prohibiting the conversion of public lands in National Forests and National Grasslands
    1. Soybeans are not produced in a habitat where endangered or threatened species are found, in such a way that disrupts essential behavioural patterns, including but not limited to: breeding, feeding, sheltering.

1. Producers are in compliance with U.S. laws that prohibit altering the habitat where endangered or threatened species are found.
   * 1. Producers are in compliance with the U.S. Endangered Species Act to protect listed animal and plant species from extinction by preserving the ecosystems in which they survive.
     2. A Habitat Conservation Plan is required as part of an application by private entities prior to undertaking projects that might result in the destruction of an endangered or threatened species.
     3. Producers are in compliance with the Federal Migratory Bird Treaty for protection of shared migratory bird resources.
2. Soybeans are not produced on land with high-carbon stock, namely land that had one of the following statuses in January 2008 and no longer has that status:
   1. Soybeans are not produced on forestland; defined as a land cover/use category that is at least 10 percent canopy cover stocked by single stemmed woody species of any size that will be at least 4 meters tall at maturity. The minimum area for classification as forestland is one acre and the area must be at least 100 feet wide. (**Article 29 (3); (4) b; (4) c).**
   2. Soybeans are not produced on wetlands (Article 29 (4) a)
   3. Producers are in compliance with Section 404 of Clean Water Act regarding agricultural impacts on wetlands; defined as land that is covered with or saturated by water permanently or for a significant part of the year.
   4. Producers are in compliance with U.S. Wetlands Conservation provisions that prohibit production of an agricultural commodity of peatland converted after December 23, 1985, which means:
      * 1. USDA keeps record of Wetland Determinations. Producers may obtain aerial imagery of their farms and a printout of their farm and tract records from local USDA office administering their farm
        2. Producers will maintain compliance with wetland conservation regulations by creating a required conservation system plan
        3. Producers will not plant on a converted wetland
        4. Producers will not convert a wetland to make possible production of agricultural commodity
3. Soybeans are not produced on peatland:
   1. Producers shall not produce raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil **(Article 29 (5)).**
   2. Producers planning to remove fence rows, combine crop fields, divide a crop field into two or more fields, or improve or modify existing drainage must notify USDA-FSA for appropriate technical determinations and obtain prior approval. Improving or modifying existing drainage should not result in drainage of deeper soil layers compared to the drainage existing in January 2008.
4. Soybeans are not produced on highly erodible land
   1. Producers are in compliance with the Highly Erodible Land Conservation program
      1. USDA maintains records of all land used and cultivated in the United States including land classified as highly erodible land. Producers may obtain aerial imagery of their farms and a printout of their farm and tract records from local USDA office administering their farm.
      2. Producers will maintain compliance with highly erodible land regulations by creating a required conservation system plan.
5. Soybeans are not produced on designated protected areas (**Article 29 (3) c)**
   1. By law or by the relevant competent authority for nature protection purposes; or
   2. For the protection of rare, threatened, or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the first subparagraph of Article 30(4),
      1. Producers are in compliance with U.S. laws that prohibit the production of soybeans on land under federal protected status, land designated Wilderness or Research Natural Areas, protected land in National Forests and Grasslands, and land in the National Landscape Conservation System
      2. Producers are in compliance with U.S. laws that prohibit production of soybeans on land protected by the National Park Service

For the purpose of cross referencing, below the RED II **Articles 29(1) – (5) and (10) – (13)** are referred to in full. (6) – (9) only refer to biofuels, bioliquids, and biomass fuels produced from forest biomass and are therefore excluded as they are not applicable for the production of soybeans. To avoid confusion, the RED II articles explicitly only refer to biofuels and bioliquids, and not to biomass fuels, as biomass fuels are not in the scope of this protocol. In case the above definitions and wordings differ from the RED II definitions below, the RED II definitions shall prevail.

***Article 29***

**Sustainability criteria for biofuels, bioliquids, and biomass fuels**

* Energy from biofuels, and bioliquids, shall be considered for the purposes referred to in points (a), (b), and (c) of this subparagraph only if they fulfil the sustainability and the greenhouse gas emissions-saving criteria laid down in paragraphs 2 to 7 and 10:
  + contributing towards the Union target set in Article 3(1) and the renewable energy shares of Member States;
  + measuring compliance with renewable energy obligations, including the obligation laid down in Article 25;
  + eligibility for financial support for the consumption of biofuels, and bioliquids,.

However, biofuels and bioliquids, produced from waste and residues, other than agricultural, aquaculture, fisheries, and forestry residues, are required to fulfil only the greenhouse gas emissions-saving criteria laid down in paragraph 10 in order to be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph. This subparagraph shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, and bioliquids.

Electricity, heating, and cooling produced from municipal solid waste shall not be subject to the greenhouse gas emissions-saving criteria laid down in paragraph 10.

[]

The sustainability and the greenhouse gas emissions-saving criteria laid down in paragraphs 2 to 7 and 10 shall apply irrespective of the geographical origin of the biomass.

* Biofuels and bioliquids, produced from waste and residues derived not from forestry but from agricultural land shall be considered for the purposes referred to in points (a), (b), and (c) of the first subparagraph of paragraph 1 only where operators or national authorities have monitoring or management plans in place in order to address the impacts on soil quality and soil carbon. Information about how those impacts are monitored and managed shall be reported pursuant to Article 30(3).
* Biofuels and bioliquids, produced from agricultural biomass considered for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with a high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status:
  + primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity, and the ecological processes are not significantly disturbed;
  + highly biodiverse forest and other wooded land which is species-rich and not degraded, or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;
  + areas designated:
    - by law or by the relevant competent authority for nature protection purposes; or
    - for the protection of rare, threatened, or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the first subparagraph of Article 30(4),

unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

* + highly biodiverse grassland spanning more than one hectare that is:
    - natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or
    - non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland.

The Commission may adopt implementing acts further specifying the criteria by which to determine which grassland are to be covered by point (d) of the first subparagraph of this paragraph. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3).

* Biofuels and bioliquids, produced from agricultural biomass considered for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with high-carbon stock, namely land that had one of the following statuses in January 2008 and no longer has that status:
  + wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year;
  + continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds in situ;
  + land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ.

This paragraph shall not apply if, at the time the raw material was obtained, the land had the same status as it had in January 2008.

* Biofuels and bioliquids, produced from agricultural biomass considered for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.

The greenhouse gas emission savings from the use of biofuels, and bioliquids, considered for the purposes referred to in paragraph 1 shall be taken into account. See chapter 5 of this Protocol for more details.

## **PILLAR 2: PRODUCTION PRACTICES CONTROL MEASURES AND REGULATIONS**

2.1 Producers apply conservation tillage methods as appropriate. Conservation tillage control measures will:

* + - increase soil health and organic matter
    - increase moisture retention
    - reduce soil compaction and soil erosion
    - reduce water and nutrient runoff
    - reduce energy use

2.2 Soybean seed commerce is in compliance with the Federal Seed Act regarding fair trade and proper labelling.

2.3 Producers are in compliance with the Plant Protection Act regulation importation of plants and plant products.

2.4 Producers apply crop rotation to improve soil health and biodiversity.

2.5 Producers apply Precision Farming Techniques as appropriate utilizing Global Positioning System (GPS) and other advanced technologies:

* + - variable rate fertilizer and herbicide application
    - field mapping for seed planting and herbicide and pesticide application
    - field mapping for fertilizer application
    - grid soil sampling
    - yield mapping

2.6 Producers will limit irrigation and comply with all applicable water conservation efforts in their irrigation districts to ensure effective and equitable allocation of water resources.

2.7 Producers apply measures to reduce and recycle waste and meet all local regulations as related to waste recycling.

## **PILLAR 3: PUBLIC AND LABOR HEALTH AND WELFARE CONTROL MEASURES AND REGULATIONS**

3.1. Producers are in compliance with the U.S. Environmental Protection Agency (EPA) Worker Protection Standard for Agriculture Pesticides meeting regulations for: pesticide safety training, notification of pesticide application, use of personal protective equipment, restricted-entry intervals after pesticide application, decontamination supplies, and emergency medical assistance.

3.1.1 An application exclusion zone of 100 feet horizontally from application equipment is required whether the pesticide is applied by air blast application, as a spray or fumigant, mist, or fog. Applicators must suspend application if they are aware of any person in the application exclusion zone per regulations in the Worker Protection Standard by the Environmental Protection Agency.

3.2 Producers are in compliance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) maintaining compliance with agricultural chemical handling, storage, and application regulations.

3.2.1 All pesticides are registered with EPA with proper labels and used in accordance with specifications including how and under what conditions chemicals can be applied.

3.2.2 Certification and training required for pesticide applicators using restricted use pesticides.

3.2.3 Producers adhere to EPA regulations concerning rotation of chemical active ingredients.

3.2.4 FIFRA requires that pesticides be classified for general or restricted-use.

3.2.5 FIFRA provides that pesticides in the restricted category may be used only under the direct supervision of certified applicators, or under such other regulatory restrictions as the EPA administrator may require.

3.2.6 FIFRA establishes general categories of certified applicator: private applicator and commercial applicator.

3.2.7 U.S. regulations provide penalties for violations of FIFRA regulations and violation of these instructions is equivalent to violating the law; consequences can include criminal prosecution, civil remedies for damages, and loss of license.

3.2.8 FIFRA provides U.S. States the authority to regulate the sale or use of any federally-registered pesticides in that state.

3.2.9 Producers adhere to all U.S. federal regulations and guidelines on farm chemical application and producers observe best management practices. Additionally, producers who apply WHO Class Ia, Ib, and II pesticides shall not apply them within 500 meters of populated areas or water bodies.

3.3 The U.S. is signatory to the Rotterdam Convention of the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade enforcing a banned list of chemicals for producer use.

3.3.1 Producers are complaint with the Toxic Substances Control Act to regulate chemicals that pose an unreasonable risk to health or to the environment and to regulate these chemicals' distribution and use.

3.4 Producers are in compliance with the Fair Labor Standards Act which prescribes standards for basic minimum wage and prohibits the employment of children under age 16 during school hours and in certain jobs deemed dangerous.

3.5 Producers are in compliance with the Federal Equal Employment Opportunity Law

3.5.1 Prohibits discrimination against:

* + - employment discrimination based on race, color, religion, sex, or national origin
    - sex-based wage discrimination, protecting men and women who perform substantially equal work in the same establishment
    - individuals who are 40 years of age or older
    - employment discrimination against qualified individuals with disabilities
    - employment discrimination based on genetic information
    - and provides guidelines on employee selection procedures

3.6 Producers are in compliance with the Occupational Health and Safety Act (OSHA) to assure safe and healthful working conditions including workplace violence guidelines.

3.6.1 OSHA provides the ability to:

* + - request OSHA to inspect workplace
    - use rights under the law without retaliation and discrimination
    - receive training about hazards, methods to prevent harm, and the OSHA standards that apply to their workplace
    - receive training in a language employees understand
    - terminate employees for noncompliance with safety regulations. Employers are at risk when employees do not follow OSHA regulations

3.7 Producers are in compliance with the Migrant and Seasonal Agricultural Worker Protection Act which provides safeguards to migrant and seasonal agricultural workers

3.8 Producers are in compliance with the Abolition of Forced Labor Act in that they shall not make use of any type of forced or compulsory labor including:

* + - as a means of political coercion, education, or as a punishment for holding or expressing political view or views opposed to the established political, social, or economic system
    - as a method of mobilizing and using labor for purposes of economic development
    - as a means of labor discipline
    - as a punishment for having participated in strikes
    - as a means of racial, social, national, or religious discrimination

3.9 Producers are in compliance with the Victims of Trafficking and Violence Protection Act providing protection and assistance for victims of trafficking regardless of immigration status.

3.10 Producers follow federal and state regulations prohibiting assault and battery.

3.11 Producers will recognize the Right of Association for workers, including the right to unionize or engage in collective bargaining in accordance with applicable federal and state laws.

3.12 Producers are in compliance with the Clean Air Act and its amendments to protect and enhance air resources to promote public health and welfare.

3.13 Producers are in compliance with the Resource Conservation and Recovery Act which controls hazardous waste, non-hazardous solid waste, and underground storage tanks.

3.14 Producers are in compliance with the Safe Drinking Water Act to protect public health by preventing contamination of surface and ground sources of drinking water.

3.15 Producers shall have documented evidence of land ownership, leases, or other legal agreements to utilize land for purpose of soy production and to show that landowners were compensated with prior and informed consent.

* + 1. The Federal Land Policy Management Act protects public lands for exploitation without authorization or rental agreement.
    2. Land use contracts are governed by state statutory and U.S. common law.
    3. The U.S. court system is the mechanism for mediating land use disputes.

3.16 Producers shall engage with local communities including traditional land users to ensure that communications of concerns, complaints, or other grievances between community members and producers are understood and addressed in a collaborative manner:

* + 1. The Emergency Planning and Community Right-to Know Act supports community awareness and response to hazardous substances used in society.
    2. The USDA cooperative extension system office is nationwide educational network that provides research-based information regarding standard agricultural practices.
    3. Producers will follow all local regulations pertaining to burning crop residue and leaving crop residue in place to provide desirable agronomic advantages including water storage and soil fertility.
    4. The Environmental Protection Agency Surf Your Watershed provides information about potential watershed contamination.

3.17 Producers will comply with the Clean Water Act Law 40 parts 116-117 which regulate discharges of designated hazardous substances. Facilities must immediately notify the National Response Center and State Agencies of any unauthorized discharge of reportable quantity of designated hazardous substance into navigable waters, the shorelines of navigable waters, and contiguous zones. Discharge of harmful quantities of oil must also be reported immediately.

* + - Watersheds with stream reaches with demonstrated water quality concerns are listed by each state government on the U.S. EPA Clean Water Act 303 list.
    - State governments may require monitoring under Clean Water Act section 319 to ensure the implementation of best management practices and to determine how conservation measures affect water quality.
    - Producers will comply with National Pollutant Discharge Elimination System (NPDES) requirements on discharges of biological pesticides, and chemical pesticides that leave a residue, into waters of the U.S.

## **PILLAR 4: CONTINUOUS IMPROVEMENT OF PRODUCTION PRACTICES AND ENVIRONMENTAL PROTECTION CONTROL MEASURES AND REGULATIONS**

To ensure producers continuingly seek improvement to production practices and environmental protection, a variety of regulated Conservation programs and technology transfer systems for best management practices have been established:

1. Conservation Reserve Program protects the most sensitive areas by providing financial assistance to set aside on a long-term basis cropland vulnerable to soil erosion or critical to wildlife habitat.
2. Conservation Stewardship Program rewards producers for overall conservation performance across entire operations.
3. Environmental Quality Incentive Program provides financial and technical assistance to increase the environmental quality of farmland still in production.
4. Regional Conservation Partnership Program provides financial and technical assistance for multi-state or watershed-scale projects.
5. Conservation Effects Assessment Project quantifies the environmental effects of conservation practices and programs on the environment and develops the science base for managing the agricultural landscape for environmental quality.
6. Cooperative Conservation Partnership Initiative provides financial assistance for partnerships between producers and Indian tribes, state and local government units, producer associations, farmer cooperatives, institutions of higher education, and NGOs.
7. The National Sustainable Soybean Initiative will develop Best Management Practices (BMP) by region and determine BMP adoption rates.
8. Producers apply technology transfer of Best Management Practices available in numerous informational mechanisms such as: Certified Crop Advisors, Discovery Farms, on-line crop rotation data for specific geographies and soil types, plot tours, experimental field and research field days, and Tactical Agriculture Programs.
9. Producers and grain handlers utilize transportation methods such as barge and rail to reduce greenhouse gas emissions and fossil fuel use.
10. Technology transfer and conservation programs are available to all producers regardless of size.
11. Field Office Technical Guides customized for local soil and conditions are available to enable producers to better their production and conservation measures.
12. Development of Additional Performance Metrics Scalability of Performance Metrics – raw data used to provide aggregated national data can be scaled down to state, or even district level crop reporting. Additional information is available to customers of U.S. soy willing to collaborate on development of quantifying smaller scale sustainability metrics.
13. The National Association of Conservation Districts represents the United States’ 3,000 conservation districts and the 17,000 men and women who serve on their boards. Conservation districts are local units of government established under state law to carry out natural resource management programs at the state level.

# **Chapter 2: Chain of Custody**

This version of the SSAP/RED will only focus on chain of custody from farm to First Gathering Point (FGP). The chain of custody consists of the following supply chain elements:

* **Farmer – compliance with self-assessment and self-declaration**

Each farmer that supplies under the SSAP/RED Protocol has to execute a self-assessment and sign a self-declaration, confirming his compliance with the sustainability requirements of this protocol. A template for this self-declaration is attached. Farmers must maintain all relevant documents, including self-declarations, delivery notes, and Conservation Plans, for at least five years or longer where it is required by the relevant national authority. and need to make this available during an audit. (Their signature on the self-declaration confirms their commitment to this obligation.)

To demonstrate compliance with the land-related sustainability criteria specified in section 1 of the SSAP/RED Protocol, farmers supplying an elevator/FGP must be located in areas that are near each other and have similar characteristics.

* **The First Gathering Point (FGP)- first certified entity in the supply chain**

SSAP/RED considers the FGP as the first SSAP/RED certified entity in the supply chain. The company operating the FGP is the group manager responsible for the internal management system that goes beyond its own operation and also includes the operations of individual group members, which could be farmers (a) or elevators (d). Every annual audit of the FGP shall be conducted onsite. The FGP needs to collect the farmer’s self-declarations and to keep mass-balance registrations for all elevators where it owns soybeans in their elevators/storages, for all the soybeans that will be traded with an SSAP/RED-compliant claim. The volumes delivered by the farmers that signed the declaration (volumes to be checked on the delivery notes) can be claimed as SSAP/RED compliant. For outgoing shipments, the FGP can obtain the SSAP/RED Sustainability Declaration (which can be the annex of the Export Certificate for overseas shipments). Requirements for this document are attached to this protocol. The FGP will provide copies of farmer self-declarations to the SES.

The FGP needs a documentation management system which provides the following components, in such a way that they are auditable:

1. SSAP/RED scope certificate or scope certificate of other RED II voluntary scheme (if they have other than SSAP/RED);
2. make available to the auditors all relevant information, including the mass balance data and the auditing reports from other RED II voluntary scheme certifications;
3. assurance mechanisms and procedures that the same soybeans do not get marketed twice as RED compliant, or if farmers supply twice under different voluntary schemes;
4. list of all farms supplying soybeans including at least the full names and addresses of the farms;
5. self-declarations of farms delivering soybeans for the respective certification period. At the date of the audit at least one self-declaration must be in place.);
6. certificate numbers and the name of certification scheme (SSAP/RED, or reference to other RED II voluntary scheme);
7. list of all storage facilities which store soybeans on behalf of the FGP with names and addresses;
8. contracts with all elevators/storage facilities which include their confirmation to relevant obligations to compliance with this protocol, detailed contractual terms in the contract between elevators and certified FGPs are given in “SSAP/RED Requirements for elevators operating under the scope of certified FGPs”. Alternatively, the FGP can prove this is covered by having ownership of the respective elevator, and assure that contractual requirements are embedded in the internal quality management system.
9. quantity bookkeeping: If elevators/dependent storage facilities are used, individual quantity bookkeeping is necessary for each storage facility. (This is further explained in chapter 3 of this protocol.);
10. the FGP will maintain a documentation management system that ensures transparency and commercial viability, and which prevents double counting of claims through the SSAP/RED, or another EU-recognized voluntary scheme.

The FGP may delegate execution of tasks to soy elevators or crop reporting districts, but it remains responsible for correct implementation of SSAP/RED requirements. Examples of delegated tasks to elevators are listed in SSAP/RED requirements for elevators operating under the scope of certified FGPs and could be the collection of self-declarations of farmers and operating the management system that stores transport documents. Examples of delegated tasks to crop reporting districts could be providing (historical) data on compliance of sustainability requirements in the district.

The following obligations can only be conducted by the FGP, as the SSAP/RED certified entity with the group manager responsibility for farms, and if applicable also for elevators. In both cases the group manager needs to:

1. have a system in place to inform group members about their responsibilities to comply to relevant SSAP/RED requirements, and any applicable changes that are implemented to the system over time;
2. organise internal audits at least on an annual basis, most likely just before the external certification audit. The internal audit must be documented and contain the name of the auditor and the participants, and include the timeframe and the subjects reviewed, which are specified below for farms and elevators separately.

**Group manager of farms**

Before accepting a farmer as an SSAP/RED-compliant supplier, the FGP shall check if the farmer provided a self-declaration (signed latest on the date of physical dispatch of the soybeans) and confirm correctness of the declaration, for which satellite imagery starting 1 January 2008 from the USDA and NRCS may be used. When accepting new farmers, the FGP shall also consider the following group requirements for farmers:

* the farmers are based in the same region (geographic proximity);
* the climatic conditions for agricultural production are similar;
* similar agricultural production methods are applied;
* the risk assessment has shown a similar risk exposure for the group members.

The FGP shall have a monitoring system in place that includes at least one self-assessment (internal audit) per year. This self-assessment shall check if the FGP, the elevators used, and the supplying farmers all comply to the SSAP/RED Protocol. The assessment shall include:

1. checks on the availability and validity of contracts and self-declarations;
2. checks on the availability, correctness, and completeness of delivery notes and whether reported amounts match records from the elevator;
3. checks to see if mass-balance calculation rules are followed in line with chapter 3 of the protocol;
4. checks to see if all other requirements of their internal management system related to SSAP/RED compliance are implemented accordingly.

**Group manager of elevators**

The FGP may work with various elevators that supply soybeans to the FGP prior to export. There are no specific group requirements for elevators, but the following assessment items will apply:

1. checks on the availability and validity of contracts;
2. checks on correct implementation of “SSAP RED Requirements for elevators operating under the scope of certified FGPs”;
3. checks on the availability, correctness, and completeness of delivery notes and sustainability declarations, and if reported amounts on these two documents match with each other and with those of the supplying farmer.

* **Trader, a certified entity after the FGP**

All companies that wish to trade soybeans with an SSAP/RED-compliant claim but which are not buying the material directly from farmers, but from SSAP/RED-certified FGPs or other SSAP/RED-certified traders, must be certified under the SSAP/RED Protocol with the trader scope.

The Trader needs a documentation management system that provides the following aspects, in such a way that they are auditable:

1. SSAP/RED scope certificate or scope certificate of other RED II voluntary scheme (if they have other than SSAP/RED);
2. All relevant information, including the mass balance data and the auditing reports from other RED II voluntary scheme certifications. Information provided includes;

* Assurance mechanism and procedure that the same soybeans get marketed twice as RED compliant, or if farmers supply twice under different voluntary schemes;
* certificate numbers, the name of voluntary scheme (SSAP/RED, or reference to another RED II voluntary scheme);
* the sustainability declarations numbers for all SSAP/RED compliant and other RED compliant consignments (chapter 3 provides more information on the different compliance claims);

1. list of all storage facilities (including names and addresses) which store soybeans on behalf of the trader.
2. contracts with all elevators/storage facilities which include confirmations to comply with this protocol;
3. quantity bookkeeping: If elevators/dependent storage facilities are used, individual quantity bookkeeping is necessary for each storage facility. (This is further explained in chapter 3 of this protocol.);
4. a documentation management system (maintained by the trader) that ensures transparency and commercial viability, and prevents double counting of claims through the SSAP/RED, or another EU recognized voluntary scheme.
5. The trader will maintain all documents for no less than five years, or longer where it is required by the relevant national authority.

The Trader may delegate execution of tasks to soy elevators, such as operating the management system that stores transport documents, but the Trader remains responsible for correct implementation of SSAP/RED requirements.

* **Elevators which operate under the scope of a certified FGP**

The Elevator needs to have a management system in place to record incoming and outgoing delivery notes, which the FGP uses to operate the mass balance system for the product with an SSAP/RED compliant claim. Further requirements for Elevators operating as a certified FGP are set in “SSAP/RED Requirements for elevators operating under the scope of certified FGPs.” These requirements recognise a different process of implementation for Elevators when they are owned or not owned by the company certified as FGP. Individual certification of the Elevator (then becoming the certified FGP), is voluntary under SSAP/RED. Delivery notes should contain, at a minimum, information on the type of product, quantity, and delivery or dispatch date. In order to determine the quantity upon delivery and dispatch, the Elevator needs to have access to an independently-calibrated weighbridge. When desirable, FGPs can delegate to the Elevators which source the soybeans locally the collection of and forwarding to the FGP, of the self-declarations. By doing so, the Elevators act as the mass-balance location of the soybeans, under the responsibility of the certified FGP. The FGP shall take Elevators used into account in the chain of custody section of their risk assessment and internal audit procedures. The Elevator is obliged to provide the above documentation and give insight to its management system (which must be covered in its contract or other written confirmation with the certified FGP) when requested by the SSAP/RED auditor.

The Elevator will maintain documents for at least five years, or longer where it is required by the relevant national authority and in a format available for auditing purposes.

* **Storage locations – operating under the scope of a certified Trader**

The storage location needs to have a management system in place to record incoming and outgoing delivery notes, based on which the Trader can operate the mass balance system for the product with an SSAP/RED compliant claim. Delivery notes should at least contain information on the type of product, quantity, and delivery or dispatch date. In order to determine the quantity upon delivery and dispatch, the storage location needs to have access to an independently-calibrated weighbridge. The storage location is obliged to provide the above documentation and give insight to its management system (which must be covered in its contract or other written confirmation with the certified FGP) when requested by the SSAP/RED auditor.

Documentation on above chain of custody requirements needs to be maintained for at least five years, or longer where it is required by the relevant national authority and in a format available for auditing purposes.

# **Chapter 3: Mass Balance**

This section describes which procedures should be followed to preserve the SSAP/RED compliant claim throughout the supply chain. The main purpose of managing a mass balance system is to assure that SSAP/RED system users and any voluntary scheme system users downstream in the supply chain can assure compliance with Article 26 and 27 of the RED II. The Elevators and the FGP act as physical collecting points, and are subject to implementing a correct mass balance, which together is referred to as Mass Balance Location. (See Annex I of this protocol.) The mass balance system operates at the level of a site which is defined as a geographic location with precise boundaries within which products can be mixed. If more than one legal entity operates at a given site, then each entity is required to operate their own mass balance system. The certified entity is responsible for correct implementation. In the section below, the mass balance principles, calculation rules, different types of claims, and mass balance period are described.

## 3.1 Mass Balance Principle

The mass balance principle is widely used in supply chains through which material with a certified chain physically flows through several locations. It is very common for the different companies to be trading materials with a certified claim simultaneously with non-certified claim materials. To avoid limitations in storage facilities, the certified claim can be disconnected from the physical soybeans when mass balance calculation rules are followed, as per **Article 30 (1)** in the RED II, which:

*(a) allows consignments of raw material or biofuel with differing sustainability characteristics to be mixed, for instance in a container, processing site, or logistical facility, or at a transmission and distribution infrastructure or site;*

*(b) allows consignments of raw material with differing energy content to be mixed for the purposes of further processing* *at the fuel production plant for the purpose of producing biofuels, bioliquids or biomass fuels, provided that the size of consignments is adjusted according to their energy content;*

*(c) requires information about the sustainability and greenhouse gas emissions-saving characteristics and sizes of the consignments referred to in point (a) to remain assigned to the mixture; and*

*(d) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture. This requires that the balance be achieved over an appropriate period of time.*

The mass balancing principle is visualised in figure 1.

Ein Bild, das Text, Screenshot, Schrift enthält.

Automatisch generierte Beschreibung

Figure 1: visualization of the mass-balance principle

The above figure is a simplified visualisation of executing the mass balance principle in an elevator. In this example, five farmers each supply 10MT of soybean. Three of these farmers do not participate in the SSAP/RED certification and supply non-sustainable soybean. The two other farmers participate, but they supply the soybean with different GHG information. One farmer declares the ddv (disaggregated default value) the other one supplies the input for which the elevator can calculate the GHG emission value, to be declared on the outgoing shipment.

After mixed storage, the outgoing shipment(s) contain a mix of all soybeans, but include a sustainability claim of 10 MT soybean based on the ddv, and 10 MT based on the GHG value calculated by the elevator.

In line with Implementing Regulation Article 19 (2) the following rules apply (note: the requirements are referred to in their original order, some are not listed as they do not apply to the scope of SSAP/RED):

(f) the mass balance system shall include information about the sustainability and the GHG characteristics and quantities of soybean, including information about the quantities of soybean for which no sustainability or GHG characteristics have been determined;

(g) where a consignment of soybean is delivered to an economic operator that is not participating in a voluntary scheme or national scheme, the delivery shall be reflected in the mass balance by withdrawing an equivalent quantity of soybean;

(j) the sustainability and GHG emissions saving characteristics of a consignment of soybean shall be considered as a set. Where consignments are withdrawn from a mixture, any of the sets of sustainability characteristics may be assigned to them provided that the sets of sustainability and GHG emissions saving characteristics are not split and the mass balance is achieved over the appropriate period of time;

(l) the appropriate period of time for achieving the mass balance shall be 12 months for producers of soybean and first gathering points or elevators sourcing soybean, and 3 months for traders. The start and end of the period shall be aligned with the calendar year or, where applicable, the four quarters of the calendar year. As alternatives to the calendar year, economic operators may also use either the economic year that they use for bookkeeping purposes or another starting point for the mass balance period, provided that the choice is clearly indicated and applied consistently. At the end of the mass balance period, the sustainability data carried forward should be equivalent to the physical stock in the container, processing or logistical facility, transmission and distribution infrastructure or site;

To summarize: the main principle of mass balance is:

***Amount of outgoing soybeans ≤ Amount of incoming soybeans per location.***

The company owning the soybeans stored in a mass balance location must never sell more soybeans with a SSAP/RED compliant claim than they have on stock within the relevant period. Further information can be found in section 3.3.

## 3.2 Transferring sustainability characteristics

Transferring sustainability characteristics to the next certified SSAP/RED system user must always be accompanied by a physical transfer of material. The information is transferred on a “sustainability declaration”, which can be issued by every certified SSAP/RED system user. Furthermore, Article 18 of the Implementing Regulation describes rules for transmission of sustainability and GHG emissions characteristics. All SSAP/RED system users shall transfer the required information through the Union Database.

Auditors need to verify that the entries in the Union Database of the certified economic operator correspond with the figures that are part of the economic operator’s bookkeeping and net mass balance data or other encoded information on their entities or sites. Any deviations between data that has been registered in the Union Database and the respective data from the economic operator’s documentation shall be immediately flagged in the audit report and to the voluntary scheme. Such discrepancies can lead to major non-conformities identified in the audit report and trigger a suspension of the certificate of the economic operator. More information on the UDB can be found at:

https://wikis.ec.europa.eu/display/UDBBIS/Union+Database+for+Biofuels+-+Public+wiki

The following sustainability characteristics are defined and must be passed down the supply chain on sustainability declarations:

Product related information:

• **Outgoing** sustainable product **specification** (soybeans)

• **Quantity** of sustainable soybeans (in metric ton)

• Country of origin of the soybeans, where the soybeans were cultivated

•Statement “SSAP/RED Compliant” (if applicable), or statement “EU RED Compliant” (if applicable)

Greenhouse Gas (GHG) related information:

The relevant RED calculation formula elements have to be reported separately. For SSAP/RED certified soybeans, these elements are:

• eec: Emissions from the extraction or cultivation of soybeans

• el:Annualised emissions from carbon stock changes caused by land use change (if applicable)

• etd: Emissions from transport and distribution of soybean

In case the exporter has not made individual GHG calculations, the following statement shall be made:

Statement: **“Use of disaggregated default value for cultivation, transport, and distribution”**

In case the soybean exporter has made individual calculations on the soybean GHG emissions, the following statement shall be made:

Statement of **an actual value in kg CO2eq per dry-ton of product, per formula element**. As an alternative for etd (transport and distribution) the means of transport and the transporting distance from the supplier to the recipient can be provided on the Sustainability Declaration, if no actual value for etd is calculated. This means the receiver of the product will be able to calculate etd.

More information on GHG emissions can be found in chapter 5 of the SSAP/RED protocol.

Alongside the above information, there is general information that has to be provided, which is given in *SSAP RED Sustainability Declaration Requirements*.

## 3.3 Mass Balance Claims

As per above mass balance definition point (a) above, there are different sustainability characteristics that should be registered. One of these characteristics is the sustainability claim of the product. The SSAP/RED Protocol considers two different sustainability claim options:

1) SSAP/RED compliant claim:

For all material included in a soybean export that was received under the control of the SSAP/RED Protocol. If this is not specifically defined on the sustainability declaration, the receiver must assume option 2.

2) RED compliant claim:

For all material included in a soybean export that was received by the exporter with a claim from another RED II voluntary scheme that meets SSAP/RED recognition requirements.

More information on recognition of other RED II schemes within SSAP/RED can be found in chapter 6 of the protocol.

Whenever the mass balance location also stores soybeans certified under another RED II sustainability scheme, proof should also be shown that the balance prevents double counting on the sustainability requirements (e.g. applying sustainability characteristics from SSAP/RED soy to soy from other RED compliant soy and to soy from non-sustainable sources). This must be proven by administrating unique reference numbers in outgoing batches that are linked to the different soy purchase batches with these different claims. Allocating unique reference numbers to all outgoing batches is considered best practice with respect to the prevention of multiple counting. The same would apply when soybeans without a sustainability claim are part of the mixture. This means that soybeans can be stored with a SSAP/RED compliant claim, a RED compliant claim, or without any sustainability claim. Physical mixing of soybeans with different claims is allowed, if the mass balance administration proves that no more soybeans with SSAP/RED claim are shipped out than the amount that entered the location.

## 3.4 Mass Balance Period

There are various options in maintaining a mass balance under RED II. Section 3.3.1 describes the two options that are required for traders. Section 3.3.2. sets less strict requirements that apply only for producers and FGPs.

### 3.4.1. Requirements for Traders

In order to assure practical implementation of mass balance rules, the RED II allows the balance between incoming and outgoing products to be **continuous in time**, but with the assurance that the system foresees that at any point in time no more sustainable material has been dispatched compared to what has been received, meaning no deficit occurs. Alternatively, the regulation allows the mass balance principle to be applied on a periodic basis of maximum three months, rather than real time application (**Article 30 (1)**). The length of the period can be chosen freely but no more than a length of three months. Within such a periodical approach, a deficit may occur, meaning that the Trader is allowed to sell and ship material from the location with an SSAP/RED compliant claim in advance of the physical arrival of the incoming material carrying that claim. However, the Trader must ensure that before the end of the mass balance period, enough compliant soybean physically entered the mass balance location to represent the volume of the material sold and shipped from the location. Furthermore, it is possible to transfer mass balance claims to the next mass balance period up to the amount of soy that is physically in stock at the moment the new mass balance period starts.

By implementing above mass balance rules, it is prevented on a periodical basis that more material with a SSAP/RED compliant claim is sold than physically available. Also important is that the certified entity should prevent multiple claiming in the event that the entity is certified under multiple RED II schemes. For the SSAP/RED recognition on other RED II schemes, see chapter 6.

More specific requirements on this topic can be found in the audit procedures of SSAP/RED.

### 3.4.2 Requirements for First Gathering Points (FGPs)

FGPs may implement the mass balance period as described above in section 3.4.1, either continuous in time or with a deficit to be compensated within a three months' timeframe. However, for FGPs and producers of agricultural biomass, a third option can be permitted. These system users may apply the **mass balance period up to 12 months**, under the condition that any deficits can only occur for a period up to three months. Other than that, the same mass balance requirements apply as for the three months’ periodical approach from section 3.4.1.

### 3.5 Mass Balance Audit Requirements

The following requirements are subject to audits:

* The company shall submit the mass balance datasheet at least two weeks prior to both the initial audits and the subsequent annual audits
* For an initial certification audit before participation in a scheme, the auditor shall check the existence and functioning of the mass balance system.
* For the subsequent annual audits, the auditor shall check at least the following:
  + List of all sites that are under the scope of certification. Each site shall have its own mass balance records.
  + List of all soybean input per site, including details of all suppliers.
  + List of all soybean output per site, including details of all customers.
  + The mass balance records must contain information on both the inputs and the outputs of sustainable and unsustainable soybeans handled by the sites.
  + The mass balance timeframe, which should be transparent, documented, and consistent, and an appropriate period of time. (See section 3.4.)
  + A sample of the calculations (inputs, outputs, conversion factors, and any balances carried forward). All data should be checked against the bookkeeping system.
  + Inputs and outputs should be accompanied, where relevant, by a set of sustainability characteristics. Auditors should check that sustainability characteristics have been allocated appropriately. At the end of the mass balance period, the sustainability data carried forward should be equivalent to the physical stock.

# **Chapter 4: Risk Assessment and Mitigation**

The SSAP/RED is only applicable to soybeans with a U.S. origin. Therefore, this section sets out a list of U.S. specific aspects to be taken into account by the SSAP/RED third-party auditor. All items refer specifically to U.S.-based regulators and control bodies which verify compliance with requirements relevant to the RED II. Those aspects can therefore contribute to the risk assessment when the data is made available to the auditor. More information on the applicable U.S. laws can be found in Annex II of this document.

* Soybean producers file form AD-1026 (Conservation Plan) annually, self-certifying compliance with all U.S. land use and conservation regulations. Forms AD-1026 are subject to random auditing by the Natural Resources Conservation Service (NRCS).
* Annual data collection and analysis of satellite imagery will confirm compliance with the land use requirements of the RED II.
* USDA will monitor soil erosion and maintain several programs to incentivize soil erosion reduction.
* USDA will monitor fossil fuel use by producers and maintain several programs to incentivize fossil fuel reduction.
  + Producers will monitor and reduce fossil fuel use for management records and to increase enterprise viability.
* Producers’ crops will be grown under the Federal Government Coordinated Framework for Regulation of Biotechnology, which is a coordinated, risk-based, system to ensure that new biotechnology products are safe for the environment as well as human and animal health.
  + The USDA's Animal and Plant Health Inspection Service (APHIS)is responsible for protecting agriculture from pests and diseases and includes regulatory oversight for products of modern biotechnology that could pose such a risk.
  + Through a registration process, the Environmental Protection Agency (EPA) regulates the sale, distribution, and use of pesticides in order to protect health, and the environment regardless of how the pesticide was made or its mode of action. This includes regulation of those pesticides that are produced by an organism through techniques of modern biotechnology.
  + The U.S. Food and Drug Administration (FDA) is responsible for ensuring the safety and proper labelling of all plant-derived food and feed, including those developed through genetic engineering.
  + Additional federal guidelines are in consideration under the by USDA as presented by the Advisory Committee on Biotechnology and 21st Century Agriculture report: *Enhancing Coexistence*.
* The complexity of the audited system user should be checked, based on the following indicators:
  + Number of farmers and their spread in size, homogeneity, spread over different regulatory areas, and risk of non-compliance to the key RED II sustainability requirements as in RED II Article 29.
  + Number of elevators and level of proof of control of the operations on these locations with regard to SSAP/RED sustainability requirements by the FGP or Trader audited.
  + Present or past participation of the system user or any of its farmers or elevators.
* Transparency on other voluntary scheme participation.
  + All SSAP/RED system users need to declare the names of all voluntary schemes approved by the European Commission under the Directive (EU) 2018/2001 in which they are, or have been, participating.
  + If the system user is using multiple schemes, the audit findings of these schemes need to be available prior to the onsite audit of the SSAP system user the risk assessment of the SSAP/RED audit. The system user must provide the full audit reports and may be obliged to request these reports with its previous CB. The risk level of the SSAP/RED will at a minimum be the same as the highest risk level of the other schemes and extra.
  + During the onsite audit, the auditor needs to have access to the full mass-balance to also check double claiming of the same soy under the different voluntary schemes.
  + If the system user has failed previous audits under other voluntary schemes but successfully passed the SSAP/RED audit, the SSAP/RED certification body shall inform all other voluntary schemes under which the system user is, or has been, operating prior to issuance of the certificate.
* Rigorousness of the internal audit procedures and execution of the SSAP/RED system user with respect to all above-mentioned risk indicators, and specifically relating to the key sustainability requirements of RED II **Article 29.**

# **Chapter 5: Greenhouse Gas (GHG) Emissions**

## 5.1 Introduction

Under the SSAP/RED Protocol, the use of disaggregated default values for “Cultivation and Transport & Distribution as determined according to RED II methodology can be applied. The values determined by the European Commission must be applied by the European buyers of the soy with an SSAP/RED compliant claim.

As per EU requirements, the SSAP/RED Protocol requires a minimum level of GHG savings for final biofuels. These minimum savings consider emissions that are caused throughout the entire supply chain and include at the minimum, Cultivation emissions (eec), Land use change emissions ((el) if relevant), Transport & Distribution emissions (etd) and Processing emissions (ep). The following emissions are covered in the RED II:

E = eec + el + ep + etd + eu – esca – eccs – eccr

where

E = total emissions from the use of the fuel

eec = emissions from the extraction or cultivation of raw materials

el = annualised emissions from carbon stock changes caused by land-use change

ep = emissions from processing

etd = emissions from transport and distribution

eu = emissions from the fuel in use

esca = emission saving from soil carbon accumulation via improved agricultural management

eccs = emission saving from carbon capture and geological storage

eccr = emission saving from carbon capture and replacement

SSAP/RED only focuses on soybeans that are exported to Europe before processing, therefore the element “emissions from processing” is not included in the scope of this protocol. Also, the two last elements “emission saving from carbon capture and geological storage” and “emission saving from carbon capture and replacement” are not included as they are not relevant for the system users of SSAP/RED. The soybean exporter must declare GHG emission values for Cultivation and Transport & Distribution. Declaring land use change emissions is only required when land use changes have occurred. In line with Article 29(10) from RED recast, Annexes V and VI, and Commission Decision 2010/335/EU of 10 June 2010 (as amended under the RED recast), SSAP/RED ensures that operators deliver accurate data on GHG emissions of soybeans produced for biofuels and bioliquids for all land use changes that occurred since 1 January 2008. The “emission saving from soil carbon accumulation via improved agricultural management” is not covered under this version of the protocol. In the case where farmers do apply any of these practices referred to in the RED II, the emission saving as a result of this practice can therefore not be taken into account. A separate guidance document on such calculation may be published in the future.

Note: EU-based importers may require maximum GHG values for Cultivation and Transport & Distribution to assure that they meet the minimum GHG savings on the final biofuel (as presented in Table 1 below) produced from U.S. soybeans against the fossil fuel references. These values are given in Table 2.

Table 1: Relevant minimum GHG saving threshold for sustainable biofuels under the RED II

|  |  |
| --- | --- |
| Requirement | Minimum savings potential |
| Biofuel and bioliquids production:  installation in operation on or before 15 October 2015 | 50% |
| Biofuel and bioliquids production:  installation in operation after 15 October 2015 | 60% |
| Biofuel and bioliquids production:  installation in operation after 1 January 2021 | 65% |

Table 2: Emission values for fossil references

|  |  |
| --- | --- |
| Biofuel/bioliquid end use purpose | Reference value |
| Biofuels for transport | 94 g CO2eq/MJ fossil fuel |
| Bioliquids used for electricity production | 183 g CO2eq/MJ fossil fuel |
| Bioliquids used for the production of heating and cooling | 80 g CO2eq/MJ fossil fuel |

As SSAP/RED has no processing in its audit and certification scope, auditing of the date of operation of final processing facilities and their compliance towards the saving targets is not directly in the scope of SSAP/RED. However, SSAP/RED system users must assure that the GHG emissions for the relevant supply chain elements, at a minimum cultivation and transport and distribution, can be accepted by operators downstream the supply chain.

GHG emission values can be determined by:

1. Referring to default values as written in the RED II Annex V (A) or (B) for biofuels and bioliquids
   1. Total default value (not used on SSAP/RED sustainability declarations);
   2. Disaggregated default value per supply chain element, given in RED II Annex V (D);
2. Individual calculated GHG emission value per SSAP/RED certified operator, as per the methodology of RED II Annex V (C).

In order to give the final biofuel producers the option to calculate their processing emissions, reference to total default value will not be allowed under SSAP/RED. The U.S. exporter only has to confirm either the actual calculated value for the applicable emission or use of disaggregated default values by adding one of the following claims on the Sustainability Declaration:

Claim in case of use of actual calculated values:

Eec: “-*actual value*- in kg CO2eq per dry-ton of product for cultivation”

El: “-actual value- in kg CO2eq per dry-ton of product for annualised emissions from carbon stock changes caused by land-use change”

Etd: “-*actual value*- in kg CO2eq per dry-ton of product for transport and distribution”

Claim in case of use of disaggregated default values:

Eec: “Use of disaggregated default value for cultivation”

Etd: “Use of disaggregated default value for transport and distribution”

Note: It is possible to combine above claims, for example by using the disaggregated default value (DDV) for Cultivation and an actual value for Transport & Distribution. The requirements for Sustainability Declarations as well as the audit procedures determine the requirements for companies in order to assure the correct declaration of GHG values. SSAP/RED certified FGPs or Traders are only allowed to forward actual GHG values when this is specifically mentioned on their certificate. Only in that way the buyer can verify that the GHG calculation has been verified as part of the audit process. In case an FGP has a mix of supplying farmers where some calculate their cultivation emissions and others use the DDV, it is not allowed to average the actual value with the DDV. In such cases the amount under actual value and the amount under DDV need to be supplied under separate sustainability declarations. It is possible to issue two declarations for partial volumes of the same shipment. This would also require two different entries in the mass balance, clearly linked to the related farmers.

For the purpose of actual value GHG emission calculations, whenever available, the standard calculation values published in Annex IX of the IR shall be applied.

In accordance with Article 31(4) of Directive (EU) 2018/2001 (REDII), the Commission may by means of implementing acts decide that respective reports from EU Member States or third countries, submitted in accordance with Article 31 paragraphs 2 and 3 contain accurate data for the purposes of measuring the greenhouse gas emissions associated with the cultivation of agriculture biomass feedstock produced in the areas included in such reports for the purposes of Article 29(10). Therefore, only respective values that have been subject to such implementing acts can be used by economic operator and respectively by certifications schemes. In case no such values exist, economic operators in the respective areas can always use either the existing disaggregated default values in Annex V of REDII or actual values, calculated in line with the methodology in part C of the same annex, which is summarized in chapter 5 of this document.

## 5.2 Calculation methodology

This section describes the detailed calculation methodology to be applied under SSAP/RED. The calculation methodologies described in this Protocol refer to the following methodologies in RED II:

1. Only **actual values**

a) Actual values shall be calculated in accordance with the methodology laid down in Annex V (C) for biofuels and bioliquids.

1. A combination of applicable **disaggregated default values and actual values** according to the below description:

Values calculated as the sum of the factors of the formulas referred to in point 1 of Annex V (C), where disaggregated default values in Annex V (D) + (E) may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Annex V (C), are used for all other factors

Section 5.2.1 describes the cultivation calculation methodology and section 5.2.2. describes the methodology for transport & distribution. In order to comply with the calculation requirements of the RED II, the formulas in this protocol are using the SI base units. The sub-sections “data gathering and data use” describe the conversion from U.S. customary units towards SI base units.

General rules for calculating own GHG emissions are:

* + 1. The calculation must be based on a data collection period of 12 months for existing companies. For new companies, the calculation can be based on expected data, but within six months after operations the calculation must be filled with actual data, which needs to be submitted to the certification body. After verification and approval, the updated GHG value(s) must be used from that moment until the next recertification audit.
    2. The EC standard calculation values and emission factors published in Annex IX of the Implementing Regulation shall be applied. The emission factors most relevant for soybean cultivation and transport are presented in Annex III of this document. In cases where a company uses products that are not listed in Annex III, or in case its product carries a significant different amount of emissions, alternatives to these emission factors may be presented to the SSAP/RED scheme for review. This submission must include scientific literature as evidence. In case there is no literature available, a laboratory analysis or individual calculation might be possible if methodology complies with RED II methodology and is verifiable. In case inputs are used that are not listed in Annex III of this document but can be found in Annex IX of the Implementing Regulation, they may be used without prior approval from the SSAP/RED scheme.
    3. Every SSAP/RED system user must submit its actual GHG calculation a minimum of two weeks prior to the annual audit to the CB for desk review. The GHG calculation includes input data and any relevant evidence, information on the emission factors, standard values applied, and reference sources. In case the desk review or the audit itself results in changes or updates of the calculation the final version needs to be resubmitted.

### 5.2.1 Emissions for Cultivation

This section summarises the calculation methodology for emissions for Cultivation of soybeans. The full methodology is described in Annex IV of this Protocol, which is the alignment with Annex VII of the Implementing Regulation. Reviewing Annex IV of this protocol is required, when the operator is making calculations to any of the below topics:

* Chemical fertilisers and pesticides

The emissions for cultivations must be allocated to the dry ton weight of the soybeans, therefore the following formula must be applied to calculate the dry weight of the soybean yield:

=

The moisture content can be determined based on the maximum moisture value allowed as per supply contract, or it can be measured after delivery.

For the calculation of cultivation emissions, various inputs must be considered. The below cultivation calculation formula is including those:

The different formula sections are explained below and calculated in sub-formulas.

The emissions for diesel use shall be calculated as per below:

For implementing this formula, please refer to section 1.1 in Annex IV of this document.

The emissions for electricity use shall be calculated as per below:

The emissions for seed use shall be calculated as per below:

For implementing this formula, please refer to section 1.3 in Annex IV of this document.

The emissions for plant protection products (PPP) shall be calculated as per below:

For implementing this formula, please refer to section 1.2 in Annex IV of this document.

The emissions for fertilizer use shall be calculated as per below:

For implementing this formula, please refer to section 1.2 and 1.4 in Annex IV of this document.

1Note: for fertilizer only the kg nutrient needs to be taken into account.

#### N2O Emission calculation

In line with Annex VII section 1.5 of the Commission's Implementing Regulation, the calculation of N2O emissions from managed soils shall follow the IPCC methodology. The use of disaggregated crop-specific emission factors for different environmental conditions (corresponding to Tier 2 of the IPCC methodology) shall be used to calculate the N2O emissions resulting from crop cultivation. Specific emission factors for different environmental conditions, soil conditions and different crops should be taken into account. Economic operators could use validated models to calculate those emission factors provided that the models take these aspects into account. In line with the IPCC guidelines, both direct and indirect N2O emissions shall be taken into account. The GNOC tool shall be used, which is based on the formulas below, following the naming conventions in the IPCC (2006) guidelines:

N2Ototal−N = N2Odirect − N + N2Oindirect – N

Where:

For mineral soils: N2ODirect−N = [(FSN + FON) • EF1ij] + [FCR • EF1]

For organic soils: N2ODirect−N = [(FSN + FON) • EF1] + [FCR • EF1] + [(FOS,CG,Temp • EF2CG, Temp] + [FCROS,CG,Trop • E2CG,Trop]

For both mineral and organic soils: N2ODirect−N = [((FSN • FracGASF) + (FON • EracGASM) • EF4] + [(FSN +FON + FCR) • FracLeach-(H) • EF5]

For implementing this formula, please refer to section 1.5 in Annex IV of this document.

#### Data gathering and data use

It is likely that farmers prefer to supply the data to elevators/FGPs in the U.S. customary units. For efficiency it is recommended that farmers do not need to convert their data towards the SI base units, this can be done by the FGP centrally. The below table shows how to convert the inputs relevant to calculate the cultivation emissions:

|  |  |  |  |
| --- | --- | --- | --- |
| Input | Likely to be provided in following units by farmers (U.S. customary units) | Must be converted in following units by FGP (SI base units) | Relevant conversion factor2 |
| Amount of soybean | Bushels | MT | 1 MT soybeans = 36.74 bushels  (<https://ussec.org/resources/conversion-table/>) |
| Diesel |  |  | 1 gallon = 3.785411784 liter  1 acre = 0.4046856422 hectare |
| Electricity |  |  | 1 acre = 0.4046856422 hectare |
| Seeds |  |  | 1 pound (lbs) = 0.45359237 kg  1 acre = 0.4046856422 hectare |
| PPPs solid |  |  | 1 pound (lbs) = 0.45359237 kg  1 acre = 0.4046856422 hectare |
| PPPs liquid3 |  |  | 1 pound (lbs) = 0.45359237 kg  1 acre = 0.4046856422 hectare |
| Fertilizers solid |  |  | 1 pound (lbs) = 0.45359237 kg  1 acre = 0.4046856422 hectare |
| Fertilizers liquid3 |  |  | 1 pound (lbs) = 0.45359237 kg  1 acre = 0.4046856422 hectare |

1Note: for fertilizer only the kg nutrient needs to be taken into account.

2source for conversion factors used is <https://www.unitconverters.net/> unless notified otherwise.

3Note: to convert from gallon to kg, the density of the product must be taken into account

When implementing the calculation formulas for cultivation, data must be gathered from a representative sample of participating farmers. Data is required from at least the square root (rounded up) of the group of farmers. The FGP should select this sample taking a risk-based approach with an equal geographical spread over its sourcing region and the various farm sizes. The SSAP/RED auditor will review and confirm if the sample approach was an appropriate representation of the whole group of supplying farmers. After using the input data from the different farmers in the calculation, the highest GHG value (e.g. the least performing farm) must be used as the own calculated cultivation value of the FGP. The following data must be gathered and serves as input for the calculation:

* Amount of soybean seeds in kg seeds per ha and yr
* Amount of plant protection products (PPP) in kg active ingredient per ha and year (for example: )
* Amount of synthetic fertilizers: phosphorus (P2O5)-, potassium (K2O)-, lime (CaO)- and nitrogen (N)- fertilizer in kg nutrient per ha and year in
* Amount of organic nitrogen (N)- fertilizers in if applicable
* Amount of soybean crop residues in if applicable
* Diesel consumption, electricity consumption, and other energy consumption (for any work related to the cultivation and drying of soybean, if applicable)
* Yield of the soybean in fresh weight and moisture content to determine the dry matter yield. If moisture content or yield of dry matter is not known, emissions can be calculated based on fresh yield and adapted by applying a moisture factor. (See the first formula in this section.) As an alternative, the moisture content can be measured after delivery to the FGP or be based on the maximum value allowed by the delivery contract with the FGP.
* Any further input used during cultivation that is causing emissions must be collected in relevant amounts per ha and included in the calculation

Companies that operate as Traders under SSAP/RED may not aggregate or average different GHG values from different suppliers (FGPs). In this case, the different values must be forwarded on different sustainability declarations, referring to the corresponding amounts from those suppliers. As an alternative, one sustainability declaration for the full outgoing batch can be created with the highest GHG value.

The following elements of the formula must be drawn from the list of emission factors in the Annex III of this protocol, or have to be derived from another recognised/certified source:

* Emission factors (EF) for soybean seed in
* Emission factors for plant protection products (PPP) in
* Emission factors for synthetic fertilizers which must reflect the emissions of production, extracting and processing of the fertilizers in (to be applied for P2O5-, K2O-, CaO- and synthetic N-fertiliser)
* Emission factors for field emissions of all Nitrogen-fertilizers including synthetic and organic N-fertilizer and crop residues in (EFfield)
* Emission factors for diesel, electricity, or other energy source in kg CO2eq per unit energy used

### 5.2.2. Annualised emissions from carbon stock changes caused by land-use change

Land-use change refers to changes in terms of land cover between the six land categories used by the IPCC: forest land, grassland, cropland, wetlands, settlements, and other land. This means, for example, that a change from grassland to cropland is a land-use change, while a change from one crop (such as corn) to another (such as soy) is not. Cropland includes fallow land, land set at rest for one or more years before being cultivated again. A change of management activities, tillage practice, or manure input practice is not considered land-use change.

Annualised emissions from carbon stock changes caused by land-use change, el, shall be calculated by dividing total emissions equally over 20 years. For the calculation of those emissions, the following rule shall be applied:

el = (CSR – CSA) × 3.664 × 1/20 × 1/P – eB

where

el  annualised greenhouse gas emissions from carbon stock change due to land-use change, measured as mass (grams) of CO2-equivalent per unit of biofuel or bioliquid energy (megajoules). ‘Cropland’[[1]](#footnote-2) and perennial cropland[[2]](#footnote-3) shall be regarded as one land use.

CSR the carbon stock per unit area associated with the reference land-use, measured as mass (tonnes) of carbon per unit area, including both soil and vegetation. The reference land-use shall be the land-use in January 2008 or 20 years before the raw material was obtained, whichever is later.

CSA the carbon stock per unit area associated with the actual land-use, measured as mass (tonnes) of carbon per unit area, including both soil and vegetation. In cases where the carbon stock accumulates over more than one year, the value attributed to CSA shall be the estimated stock per unit area after 20 years or when the crop reaches maturity, whichever is earlier

3,664 This number is a quotient obtained by dividing the molecular weight of CO2 (44,010 g/mol) by the molecular weight of carbon (12,011 g/mol).

1/20 As the formula is based on the carbon stock difference (CSR – CSA) that occur, this element is added to the formula as it should not be attributed to a single harvest and claimed all at once but is aimed to be claimed over a period of 20 years.

P the productivity of the crop (measured as biofuel or bioliquid energy per unit area per year)

eB bonus of 29 g CO2eq/MJ biofuel or bioliquid if biomass is obtained from restored degraded land shall be attributed, but only if evidence is provided that the land:

* was not in use for agriculture or any other activity in January 2008; and
* is severely degraded land, including such land that was formerly in agricultural use.

eB shall apply for a period of up to 20 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks as well as a sizable reduction in erosion phenomena for severely degraded land are ensured.

#### Data gathering and data use

The above calculation formula for land-use change emissions implies a significant data gathering mechanism by the SSAP/RED system user in cases where land-use change applied. Only in case farmland has been used where the actual land use (cropland) was different in January 2008 or 20 years before the harvest of the soybeans, the land use change calculations must be implemented.

The documents referred to in RED II are listed below:

* the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 4
* Regulation (EU) No 525/2013 and Decision No 529/2013/EU (OJ L 156, 19.6.2018, p. 1)
* Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate, and energy framework

As per RED II Annex V Part C point 10, the Commission shall review, by 31 December 2020, guidelines for the calculation of land carbon stocks drawing on the above-referenced documents. The guidelines resulting from this review shall serve as the basis for the calculation of land carbon stocks for the purposes of RED II and therefore for this Protocol. When appropriate, a guidance document will be published by the SSAP/RED scheme. Until this time, Commission Decision (2010/335/EU) of 10 June 2010 on guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC shall be applied.

### 5.2.3. Emissions for Transport and Distribution

For the calculation of transport emissions, the below formula shall be used

Calculation Formula

Calculating transport emissions of soybeans by truck, train or vessel must be done by using the following calculation formula:

This is the distance on which the transport takes place.

This is the Emission Factor of the transport vehicle in kg CO2 equivalent per ton per km.

The Annex IX of the Implementing Regulation gives a full overview of factors that shall be used to calculate the relevant emission factor for the applicable transport mode. The Annex III of this Protocol specifies a short list of factors relevant for soybean transport using either Diesel, Gasoline or HFO in table 5a. Table 5b includes the fuel efficiency factors for truck, “handymax” bulk carrier, inland bulk carrier or train.

It shall be noted that the factors are given in gCO2eq/MJ, whereas the calculated value for raw materials and intermediates shall be expressed in gCO2-eq/kg-dry product. Table 5a in Annex III of this document presents the Lower Heating Values for the relevant fuels to convert the GHG emission factors appropriately.

#### Data gathering and data use

It is likely that data on above formula elements are available primarily in the U.S. customary units. For efficiency it is recommended that conversion of data towards the SI base units is done centrally by the FGP. The below table shows how to convert the inputs relevant to calculate the transport emissions:

|  |  |  |  |
| --- | --- | --- | --- |
| Input | Likely to be provided in following units by farmers (U.S. customary units) | Must be converted in following units by FGP (SI base units) | Relevant conversion factor2 |
| Amount of soybean | *Bushels* | *MT* | 1 MT soybeans = 36.74 bushels  (<https://ussec.org/resources/conversion-table/>) |
| Diesel |  |  | 1 gallon = 3.785411784 liter  1 acre = 0.4046856422 hectare |
| Distance | in miles | in km | 1 mile = 1.609344 km |
| Fuel consumption | gallon/mile | liter/km | 1 gallon = 3.785411784 liter  1 mile = 1.609344 km |

2source for conversion factors used is <https://www.unitconverters.net/> unless notified otherwise.

For implementing the calculation formulas for Transport and Distribution, the following data must be gathered and serves as input for the calculation:

* Transport distance (. Note that it is not allowed to average transport distances or from calculated transport emissions of calculated emissions of different transport modes.
* The transport vehicle type, and in case of trucks, their loading capacity
* The amount of soybean transported

Companies that operate as Traders under SSAP/RED may not aggregate/average different GHG values from different suppliers (FGPs). In this case the different values must be forwarded on different sustainability declarations, referring to the corresponding amounts from those suppliers. As an alternative, one sustainability declaration for the full outgoing batch can be created with the highest GHG value.

The following elements of the formula must be drawn from the list of emission factors in the Annex III of this protocol, or, whenever available, the standard calculation values published in Annex IX of the IR shall be applied:

* Fuel consumption
* Emission factor of the fuel (when using Formula 1)
* Emission factor of the transport vehicle (when using Formula 2)

# **Chapter 6: Recognition of other RED II schemes**

SSAP/RED is a scheme that is focusing on soybeans from U.S. origin. In case U.S. soybeans are bought with a claim of another RED II voluntary scheme recognized and approved by the European Commission under the Directive (EU) 2018/2001 which includes all SSAP/RED scope elements of this protocol (e.g. soybeans from U.S. origin), and sold by companies operating under SSAP/RED, it is allowed to use the RED compliant claim. The SSAP/RED compliant claim is only allowed when the full supply chain up to the soybean exporter is covered under the SSAP/RED protocol. It is explicitly not allowed to:

1. bring feedstocks other than soybeans under the scope of SSAP/RED
2. import soybeans from outside the U.S. (with another RED compliant claim) and sell those soybeans with a SSAP/RED claim.

# **Annex I - Glossary**

**Continuously Forested Land**

Continuously forested land is defined as a land cover/use category that is at least 30% stocked by single stemmed woody species of any size that will be at least 4 meters tall at maturity. The minimum areas for classification as forestland that is 1 acre and at least 100 feet wide. (**Article 29 (3) a, (4) b**).

**Other Forested** **Land**

Other forested land is defined as land cover/use category that is 10-30% stocked by single stemmed wood species of any size that will be at least 4 meters tall at maturity. (**Article 30 (3) a, (4) c**).

**Crop Reporting District**

This is the regional administrative office at the county level in the United States. Data from crop reporting districts can be helpful to cross check compliance of farmers in the area against specific SSAP/RED requirements. Certified FGPs may use this information in their internal audits, but remain responsible for their conclusions based on information provided by the crop reporting district.

**Certificate Holder**

The legal entity responsible for making an SSAP/RED compliant claim on soybeans needs to be a certificate holder of a valid SSAP/RED scope certificate. This certificate confirms the legal entity has procedures and system in place for correct implementation of SSAP/RED requirements. The document also assures buyers that the legal entity is able to sell them the soybeans with a RED-compliant claim.

**Certificate Scopes**

Each SSAP/RED scope certificate mentions the certification scope of the legal entity, which describes the activities of the company. Together, they are referred to as “Certified Main Entity.” SSAP/RED has defined two different scopes:

**1. First Gathering Point (FGP)** – buying material based on farmer self-assessment, selling material with a SSAP/RED compliant claim.

**2. Trader** – buying and selling material with a SSAP/RED compliant claim.

**Certified Main Entity**

This is the company that applies for SSAP/RED certification, acting either as certified FGP or Trader. The certified FGP can include Elevators and Farms in its certification scope. The certified Trader can only buy material from certified FGPs and can have Storage locations in its scope.

**Default Value**

This is derived from a typical value by the application of pre-determined factors and that may, in circumstances specified in this Directive, be used in place of an actual value.

**Elevator**

The Elevator acts as the first physical collection point of the soybean. It will act as a mass-balance location in the SSAP/RED supply chain under the responsibility of a certified FGP. Individual certification of the Elevator, then becoming the certified FGP, is voluntary under SSAP/RED. Administration responsibility of the mass balance location is with the certified legal entity (e.g. FGP), but administration should always be linked to information collected at the Elevator. The Elevator may take up delegated tasks from the FGP, such as the collection of self-declarations to the Elevator, but the FGP remains responsible for the internal monitoring system.

**Export Certificate**

This is the document created by the soybean exporter, which confirms U.S. legal requirements for the export of soybeans are met.

**Degraded land**

This is land that is characterised by long-term loss of biodiversity due to for instance overgrazing, mechanical damage to the vegetation, soil erosion, or loss of soil quality.

**FGP (First Gathering Point)**

This is the first SSAP/RED certified entity in the supply chain, normally the soybean exporter. This entity is buying soybeans and receives self-declarations from the Farmers that produced the soy. The entity is certified and can therefore bring the soybeans to the market with a SSAP/RED compliant claim. The FGP may delegate execution of tasks to soy elevators or crop reporting districts, but the FGP remains responsible for correct implementation of SSAP/RED requirements. Examples of delegated tasks to Elevators could be the collection of self-declarations of farmers and managing the system that stores transport documents. Examples of delegated tasks to crop reporting districts could be providing (historical) data on compliance of sustainability requirements in the district.

**Grassland**

Grassland is terrestrial ecosystems dominated by herbaceous or shrub vegetation for at least five years continuously. It includes meadows or pasture that is cropped for hay but excludes land cultivated for other crop production and cropland lying temporarily fallow. It further excludes continuously-forested areas as defined in Pillar 1 paragraph 1.3 unless these are agroforestry systems which include land-use systems where trees are managed together with crops or animal production systems in agricultural settings. The dominance of herbaceous or shrub vegetation means that their combined ground cover is larger than the canopy cover of trees

**Human Intervention**

This means managed grazing, mowing, cutting, harvesting, or burning

**Mass Balance**

Each physical location that stores soybeans that is no longer in legal ownership of the Farmer is subject to mass balance and its calculation rules. These are described in section 3.1 of this protocol. A mass balance system:

*a) allows consignments of soybeans with differing sustainability characteristics to be mixed, for instance in a container, processing site, or logistical facility*;

*(b) allows consignments of raw material with differing energy content to be mixed for the purposes of further processing* *at the fuel production plant for the purpose of producing biofuels, bioliquids or biomass fuels, provided that the size of consignments is adjusted according to their energy content;*

*(c) requires information about the sustainability and greenhouse gas emissions-saving characteristics and sizes of the consignments referred to in point (a) to remain assigned to the mixture; and*

*(d) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture. This requires that this balance be achieved over an appropriate period of time.*

Whenever the physical location also stores soybeans certified under another RED II sustainability scheme, proof should also be shown that the balance prevents double counting on the sustainability requirements (e.g. applying sustainability characteristics from SSAP/RED soy to soy from other RED-compliant soy and to soy from non-sustainable sources). This must be proven by administrating unique reference numbers in outgoing batches that are linked to the different soy purchase batches with these different claims. The same would apply when soybeans without a sustainability claim are part of the mixture. This means that soybean can be stored with a SSAP/RED-compliant claim, a RED-compliant claim, or without any sustainability claim. Physical mixing of soybean with different claims is allowed, as long as mass balance administration proves that no more soybeans with a SSAP/RED claim are shipped out than the amount that entered the location.

**Mass Balance Location**

This is the physical location where soybeans are stored that is no longer in legal ownership of the Farmer. The mass balance system operates at the level of a site which is defined as a geographic location with precise boundaries within which products can be mixed. If more than one legal entity operates at a given site, then each entity is required to operate their own mass balance system.

**Natural highly biodiverse grassland**

means grassland that:

(a) would remain grassland in the absence of human intervention; and

(b) maintains the natural species composition and ecological characteristics and processes;

**Non-natural highly biodiverse grassland**

means grassland that:

(a) would cease to be grassland in the absence of human intervention; and

(b) is not *degraded*; and

(c) is *species-rich*

**Outermost Regions**

Outermost regions have a specific situation which has been addressed in the RED II, referring to Article 349 TFEU. The energy sector in the outermost regions is often characterised by isolation, limited supply, and dependence on fossil fuels while those regions benefit from significant local renewable sources of energy. The outermost regions could thus serve as examples of the application of innovative energy technologies. For SSAP/RED, this definition is mainly relevant for cases where soybeans could be used for electricity generation. If this happens in outermost regions, the emissions can be calculated against a higher fossil fuel comparator, resulting in a better saving value.

**Peatland**

Peatland soils are soils with horizons of organic material (peat substrate) of a cumulative thickness of at least 30 cm at a depth of down to 60 cm. The organic matter contains at least 20 mass percent of organic carbon in the fine soil

**Primary Forest**

Primary Forests are defined as forest or wooded land of native species where there is no clearly visible indication of human activity, and where the ecological processes are not significantly disturbed.

**Producers**

This term merely refers to a multitude of single farmers operating independent from each other as opposed to a group of farmers associated with each other as a group or managed by a group manager. The SSAP/RED Protocol does not include farm group auditing and certification, as Farmer compliance is covered as part of the scope of the FGP audit.

**Self-Declaration**

This is the document that shall be filled out and signed by the Farmer representing the trading entity of the farm. The document confirms the soybeans are grown in compliance with the SSAP/RED requirements. The declaration also confirms that the Farmer accepts additional evidence requests and/or onsite audits.

**Soy Farmer**

This is the person that represents the legal entity responsible for growing the soy. This may be done on their own land or subcontracted/leased land. This person is responsible for the Self-assessment/declaration.

**Species Rich**

**In line with the Commission Regulation (EU) No 1307/2014 Article 1 (4) (c), that is to say it is:**

a) a habitat of significant importance to critically endangered, endangered or vulnerable species as classified by the International Union for the Conservation of Nature Red List of Threatened Species or other lists with a similar purpose for species or habitats laid down in national legislation or recognised by a competent national authority in the country of origin of the raw material; or

b) a habitat of significant importance to endemic or restricted-range species; or

c) a habitat of significant importance to intra-species genetic diversity; or

d) a habitat of significant importance to globally significant concentrations of migratory species or congregatory species; or

e) a regionally or nationally significant or highly threatened or unique ecosystem

**SSAP/RED scope certificate**

Legal entities that wish to collect and or trade soybeans with a SSAP/RED-compliant claim need a SSAP/RED scope certificate. This document is the proof for buyers that the Trader can supply soybeans with an SSAP/RED-compliant claim and includes a Sustainability Declaration (as an annex to the Export Certificate).

**Sustainability Declaration**

For all SSAP/RED compliant soybeans exported, a Sustainability Declaration will be added to the Export Certificate to assure the buyer the soybeans are produced and gathered in line with the SSAP/RED requirements. This document will also provide the buyer with the necessary information that needs to be passed on to the final user of the biofuel that is produced from the soybean.

**Storage Location**

This is the location where the soybeans are stored that are under legal ownership of a SSAP/RED certified Trader. It will act as a mass-balance location in the SSAP/RED supply chain under the responsibility of a certified Trader. Individual certification is voluntary under SSAP/RED. Administration responsibility of the mass balance location is with the certified legal entity (e.g. Trader), but administration should always be linked to information collected at the Elevator.

**Tract**

Field on which soybeans are grown. One Farmer can have different tracts. Tracts can be in legal ownership of the farm-trading entity, or they can be subcontracted/leased from other landowners.

**Trader**

This is a legal entity that wishes to trade soybeans with an SSAP/RED-compliant claim but are not buying the material directly from farmers; rather they are buying from SSAP/RED-certified FGPs or other SSAP/RED-certified Traders, and must be certified under the SSAP/RED Protocol with the Trader scope. The Trader may delegate execution of tasks to soybean storage locations, but the Trader remains responsible for correct implementation of SSAP/RED requirements. An example of a task delegated to storage locations could be operating the management system that stores transport documents.

**Verification / Third party Assessment**

All SSAP/RED-certified legal entities, such as FGPs or Traders, are subject to an annual third-party assessment that will verify if entities act in compliance with the SSAP/RED requirements. After a completed verification without unsolved non-conformities, the legal entity receives a SSAP/RED scope certificate.

**Wetland**

Land that is covered with or saturated by water permanently or for a significant part of the year. In order to confirm if land complies to this definition, specific indicators are used to verify and reflect seasonal changes within a given year.

# **Annex II - Reference to U.S. Laws**

SSAP/RED is referring to the following U.S. federal regulations:

Clean Air Act of 1990

Clean Water Act of 1987

Endangered Species Act of 1973

Federal Insecticide, Fungicide and Rodenticide Act

Federal Land Policy and Management Act of 1976

Fish and Wildlife Conservation Act of 1980

National Environmental Policy Act of 1969

National Trails System Act of 1968

National Wildlife Refuge System Act of 1966

National Forest Management Act of 1972

Occupational Safety and Health Act of 1970

Renewable Fuel Standard (CFR Title 40 Part 80 Subpart M 80.1401)

Soil and Water Conservation Act of 1977

Wild and Scenic Rivers Act of 1968

Wilderness Act of 1964

**CFR Title 40 Part 80 Subpart M 80.1401 (the Renewable Fuel Standard**), as amended, defines **existing agricultural land** as cropland, pastureland, and land enrolled in the Conservation Reserve Program that was cleared or cultivated prior to December 19, 2007, and that, on December 19, 2007, was non-forested and actively managed as agricultural land as evidenced by records traceable to the land in question.

**Clean Water Act Section 404** prohibits discharged of dredged or fill material into water including wetlands with perm it of the Army Corp of Engineering. Permit can be vetoed by the Environmental Protection Agency under Section 404 of the Clean Water Act.

[Section 404 of the Clean Water Act](https://www.epa.gov/cwa-404/clean-water-act-section-404) (CWA) establishes a program to regulate the discharge of [dredged](https://www.epa.gov/cwa-404/further-revisions-clean-water-act-regulatory-definition-discharge-dredged-material) or [fill](https://www.epa.gov/cwa-404/further-revisions-clean-water-act-regulatory-definition-discharge-dredged-material) material into [waters of the United States](https://www.epa.gov/nwpr/about-waters-united-states), including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States.

The basic premise of the program is that no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation’s waters would be significantly degraded. In other words, when you apply for a permit, you must first show that steps have been taken to avoid impacts to wetlands, streams, and other aquatic resources; that potential impacts have been minimized; and that [compensation](https://www.epa.gov/cwa-404/compensatory-mitigation) will be provided for all remaining unavoidable impacts.

Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the [U.S. Army Corps of Engineers](http://www.usace.army.mil/Missions/Environmental.aspx), which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) Guidelines, regulations promulgated by EPA.

Endangered Species Act of 1973 Sec 9 (a) 1 (G) and Sec 9 (a) 2 (e) as amended makes it unlawful for any person – including private and public entities – to “take” individuals of an endangered or threatened species. “Take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” is further defined to include significant habitat modification or degradation which “actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.”

**Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)** was first passed in 1947. It established procedures for registering pesticides with the U.S. Department of Agriculture and established labelling provisions. The law underwent major revision in 1972 and has since been amended numerous times, including some significant amendments in the form of the Food Quality Protection Act (FQPA) of 1996. In 1972, FIFRA transferred responsibility of pesticide regulation to the Environmental Protection Agency (EPA) and shifted its own emphasis to protection of the environment and public health.

FIFRA mandates that EPA regulate the use and sale of pesticides to protect human health and preserve the environment.  The EPA is specifically authorized to: strengthen the registration process by shifting the burden of proof to the chemical manufacturer and enforce compliance against banned and unregistered products. Further amendments have strengthened the regulatory framework, including the authority to oversee the sale and use of pesticides, the registration process and determination of effectiveness for its intended use, appropriate dosage, and hazards of the particular material. FIFRA established a system of examination and certification both at the private level and at the commercial level for applicators who wish to purchase and use restricted-use pesticides.  The distribution of restricted pesticides is also monitored.

**Food Security Act of 1985, as amended,** suspends subsidies to farmers who convert wetlands to agricultural production. Wetlands are defined as an area that has a predominance of hydric soils and is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of water-tolerant vegetation typically adapted for life in saturated soil conditions.

# **Annex III - List of emission factors for calculating actual GHG emissions**

**Table 4: Emission factors for cultivation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | GHG emission coefficient | | | |
| N-fertiliser (kg N) | gCO2/kg | gCH4/kg | gN2O/kg | gCO2-eq/kg |
| Ammonium nitrate (AN) | 2671 | 6,9 | 2,1 | 3469 |
| Ammonium sulphate (AS) | 2560 | 6,5 | 0,0 | 2724 |
| Ammonium nitrate sulphate (ANS) | 2561 | 8,9 | 1,3 | 3162 |
| Anhydrous ammonia | 2662 | 6,8 | 0,0 | 2832 |
| Calcium nitrate (CN) | 2653 | 7,0 | 5,1 | 4348 |
| Urea | 1703 | 9,3 | 0,0 | 1935 |
| Urea ammonium nitrate (UAN) | 2182 | 7,5 | 1,1 | 2693 |
| P2O5-fertiliser (kg P2O5) | gCO2/kg | gCH4/kg | gN2O/kg | gCO2-eq/kg |
| Triple superphosphate (TSP) | 517 | 0,9 | 0,0 | 544 |
| Rock phosphate 21%P2O5 23%SO3 | 95 | 0,0 | 0,0 | 95 |
| Mono ammonium phosphate (MAP) 11%N 52%P2O5 | 967 | 2,5 | 0,0 | 1029 |
| Di-Ammonium-Phosphate (DAP) 18%N 46%P2O5 | 1459 | 3,7 | 0,0 | 1552 |
| K2O-fertiliser (kg K2O) | gCO2/kg | gCH4/kg | gN2O/kg | gCO2-eq/kg |
| Muriate of Potash (MOP) 60%K2O | 409 | 0,17 | 0,0 | 413 |
| Other fertilisers | gCO2/kg | gCH4/kg | gN2O/kg | gCO2-eq/kg |
| NPK 15-15-15 | 4261 | 10,0 | 1,7 | 5013 |
| MgO (kg MgO) | 769 | 0,0 | 0,0 | 769 |
| Sodium (Na) fertiliser (kg Na) | 1620 | 0,0 | 0,0 | 1620 |
| Seeds |  |  |  |  |
| Seeds- soy bean | 0,0 | 0,00 | 0,0000 | 0,0 |

Table 5a: Emission factors for transport & distribution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Fuel type | GHG Emission Coefficient gCO2-eq/MJ | Fossil energy input MJfossil/MJ | Density Kg/m3 | LHV (lower heating value) MJ/kg-dry |
| Diesel | 95,1 | 1,2300 | 832 | 43,1 |
| Gasoline | 93,9 | 1,2000 | 745 | 43,2 |
| Heavy Fuel oil | 94,2 | 1,1600 | 970 | 40,5 |

**Table 5b: Fuel efficiencies for relevant transport modes**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fuel Efficiency | Transport exhaust gas emissions | |
| Input - transport efficiencies | MJ/t.km | gCH4/t.km | gN2O/t.km |
| Truck (40 tonne) for dry product (Diesel) | 0,81 | 0,003 | 0,0015 |
| ‘Handymax’ bulk carrier (fuel oil) - Grains | 0,10 |  |  |
| Inland bulk carrier, 8.8 kt (diesel) | 0,32 | 0,093 | 0,0004 |
| Freight train USA (diesel) | 0,25 | 0,005 | 0,0010 |

Note: The above tables are a selection. For the purpose of actual value GHG emission calculations, whenever available, the standard calculation values published in Annex IX of the IR shall be applied.

# **Annex IV – Alignment with Annex VII of the Implementing Regulation:**

### METHODOLOGY FOR DETERMINING THE EMISSIONS FROM THE EXTRACTION

### OR CULTIVATION OF RAW MATERIALS

To calculate the emissions from the extraction or cultivation of raw materials Part C, point 5 of Annex V and Part B, point 5 of Annex VI to Directive 2018/2001 (EU) state that the calculation shall include the sum of all emissions from the extraction or cultivation process itself; from the collection, drying and storage of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation.

The capture of CO2 in the cultivation of raw materials shall be excluded. Estimates of emissions from agriculture biomass cultivation may be derived from the use of regional averages for cultivation emissions included in the reports referred to in Article 31(4) of Directive 2018/2001 (EU) or the information on the disaggregated default values for cultivation emissions included in this Annex, as an alternative to using actual values. In the absence of relevant information in those reports, averages can be calculated based on local farming practices, for instance on data of a group of farms, as an alternative to using actual values.

**EMISSIONS FROM THE EXTRACTION OR CULTIVATION PROCESS ITSELF**

The emissions from the extraction or cultivation process itself shall include all emissions from (i) the provision of the fuels for farm machinery used; (ii) the production of seeding material for crop cultivation; (iii) the production of fertilisers and pesticides; (iv) fertiliser acidification and liming application; and (v) soil emissions from crop cultivation.

* 1. **Fuel use (diesel oil, gasoline, heavy fuel oil, biofuels or other fuels) for farm machinery**

The GHG emissions from crop cultivation (field preparation, seeding, fertiliser and pesticide application, harvesting, collection) shall include all emissions from the use of fuels (such as diesel oil, gasoline, heavy fuel oil, biofuels or other fuels) in farm machinery. The amount of fuel use in farm machinery shall be duly documented. Appropriate emission factors of the fuels must be used in accordance with Annex IX. Where biofuels are used, the default GHG emissions set out in Directive 2018/2001 must be used.

* 1. **Chemical fertilisers and pesticides**

The emissions from the use of chemical fertilisers and pesticides1 for the cultivation of raw materials shall include all related emissions from the manufacture of chemical fertilisers and pesticides. The amount of the chemical fertilisers and pesticides, depending on the crop, local conditions and farming practices, shall be duly documented. Appropriate emission factors, including upstream emissions, must be used to account for the emissions from the production of chemical fertilisers and pesticides pursuant to Annex IX. If the economic operator knows the factory producing the fertiliser and it falls under the EU Emissions Trading System (ETS), then the economic operator can use the production emissions declared under ETS, adding the upstream emissions for natural gas etc. Transport of the fertilisers shall also be included, using the emissions from transport modes listed1 ‘Pesticides’ means all plant protection products, including herbicides, insecticides, fungicides, etc.in Annex IX. If the economic operator does not know the factory supplying the fertiliser, it should use the standard values provided for in Annex IX.

* 1. **Seeding material**

The calculation of cultivation emissions from the production of seeding material for crop cultivation shall be based on actual data on the seeding material used. Emission factors for the production and supply of seeding material can be used to account for emissions associated with the production of seeds. The standard values for emission factors set out in Annex IX must be used. For other seeds, literature values from the following hierarchy must be used.

1. version 5 of JEC-WTW report;
2. ECOINVENT database;
3. ‘official’ sources, such as Intergovernmental Panel on Climate Change (IPCC), International Energy Agency (IEA) or governments;
4. other reviewed sources of data, such as E3 database, GEMIS database;
5. peer-reviewed publications;
6. duly documented own estimates.
   1. **Emissions from fertiliser acidification and liming application**

The emissions from the neutralization of fertilizer acidification and application of aglime shall account for the CO2 emissions from neutralization of acidity from nitrogen fertilizers or from aglime reactions in the soil.

* + 1. Emissions from neutralization of fertilizer acidification

The emissions resulting from acidification caused by nitrogen fertilizer use in the field shall be accounted for in the emission calculation, based on the amount of nitrogen fertilizers used. For nitrate fertilizers, the emissions from the neutralization of nitrogen fertilizers in the soil shall be 0.783 kg CO2/kg N; for urea fertilizers, the neutralization emissions shall be 0.806 kg CO2/kg N.

* + 1. Soil emissions from liming (aglime)

The real amount of aglime used shall be duly documented. Emissions shall be calculated as follows:

* + - 1. On acid soils, where pH is less than 6.4, aglime is dissolved by soil acids to form predominantly CO2 rather than bicarbonate, releasing almost all of the CO2 into the aglime (0.44 kg CO2/kg CaCO3 equivalent aglime).
      2. If soil pH is greater or equal to 6.4, an emission factor of 0.98/12.44 = 0.079 kg CO2/ (kg CaCO3-equivalent) aglime applied shall be taken into account in the calculation, in addition to the emissions due to the neutralisation of acidification caused by the fertiliser.
      3. The liming emissions calculated from actual lime use, calculated in points 1 and 2 above, may be greater than the fertilizer neutralization emissions calculated in 1.4.1 if the fertilizer acidification was neutralized by the applied lime. In such a case, the fertilizer neutralization.

emissions (in 1.4.1) may be subtracted from the calculated liming emissions to avoid that its emissions are counted twice.

The emissions from fertilizer acidification may exceed those attributed to liming. In such a case, the subtraction would result in apparently negative net liming emissions because not all of the fertilizer-acidity is neutralized by aglime but also partly by naturally-occurring carbonates. In this case, the net liming emissions shall be counted zero, but the fertilizer- acidification emissions that occur anyway shall be maintained in line with section 1.4.1.

If data on actual aglime use is not available, the aglime use recommended by the Agricultural Lime Association shall be assumed. This shall be a function of the type of crop, measured soil pH, soil type and type of liming material. The accompanying CO2 emissions shall be calculated using points 1 and 2 of the procedure above. However, the subtraction specified in point 3 shall not be applied in this case, since the recommended use of aglime does not include aglime used to neutralize fertilizer applied in the same year, so there is no possible double counting of fertilizer neutralization emissions.

* 1. **Soil (nitrous oxide/N2O) emissions from crop cultivation**

The calculation of N2O emissions from managed soils shall follow the IPCC methodology. The use of disaggregated crop-specific emission factors for different environmental conditions (corresponding to Tier 2 of the IPCC methodology) shall be used to calculate the N2O emissions resulting from crop cultivation. Specific emission factors for different environmental conditions, soil conditions and different crops should be taken into account. Economic operators could use validated models to calculate those emission factors provided that the models take these aspects into account. In line with the IPCC guidelines2, both direct and indirect N2O emissions shall be taken into account. The GNOC tool shall be used, which is based on the formulas below, following the naming conventions in the IPCC (2006) guidelines:

*N2Ototal−N = N2Odirect − N + N2Oindirect – N*

Where:

For mineral soils: *N2ODirect−N = [(FSN + FON) • EF1ij] + [FCR • EF1]*

For organic soils: *N*2*ODirect*−*N* = *[(FSN + FON) • EF1] + [FCR • EF1] + [(FOS,CG,Temp • EF2CG, Temp] + [FCROS,CG,Trop • E2CG,Trop]*

For both mineral and organic soils: *N*2*ODirect*−*N* = *[((FSN • FracGASF) + (FON • EracGASM) • EF4] + [(FSN +FON + FCR) • FracLeach-(H) • EF5]*

* + 1. **Crop residue N input**

It must be calculated for:

1. sugar beet, sugar cane according to IPCC (2006) Vol. 4 Chapter 11 Eq. 11.6, not considering below-ground residues and with the addition of N input from vignasse and filter cake in the case of sugar cane;

*FCR = Yield • DRY • (1-FracBurnt • Cf) • [RAG • NAG • (1 - FracRemove)] + FVF*

1. for all other crops according to IPCC (2006) Vol. 4 Chapter 11 Eq. 11.7a 11.11, 11.12, as

*FCR = (1-FracBurnt • Cf) • AGDM • NAG • (1-FracRemove) + (AGDM + Yield • DRY) • RBG-BIO • NBG*

Where:

N2Ototal - N = direct and indirect annual N2O–N emissions produced from managed soils; kg N2O– N ha-1 a-1

N2Odirect - N = annual direct N2O–N emissions produced from managed soils; kg N2O–N ha-1 a-1

N2Oindirect - N = annual indirect N2O–N emissions (that is to say, the annual amount of N2O–N produced from atmospheric deposition of N volatilised from managed soils and annual amount of N2O–N produced from leaching and run-off of N additions to managed soils in regions where leaching/run-off occurs); kg N2O–N ha-1 a-1

2 IPCC (2006), Vol. 4, Chapter 11: N2O emissions from managed soils, and CO2 emissions from lime and urea application.

FSN = annual synthetic nitrogen fertiliser input; kg N ha-1 a-1

FON = annual animal manure N applied as fertiliser; kg N ha-1 a-1

FCR = annual amount of N in crop residues (above ground and below ground); kg N ha-1 a-1

FOS,CG,Temp = annual area of managed/drained organic soils under cropland in temperate climate; ha-1 a-1

FOS,CG,Trop = annual area of managed/drained organic soils under cropland in tropical climate; ha-1 FracGASF = 0.10 (kg N NH3–N + NOx–N) (kg N applied)-1. Volatilisation from synthetic fertiliser

FracGASM = 0.20 (kg N NH3–N + NOx–N) (kg N applied)-1. Volatilisation from all organic nitrogen fertilisers applied

FracLeach-(H) = 0.30 kg N (kg N additions) -1. N losses by leaching/run-off for regions where leaching/run-off occurs

EF1ij = Crop and site-specific emission factors for N2O emissions from synthetic fertiliser and organic N application to mineral soils (kg N2O–N (kg N input)-1);

EF1 = 0.01 [kg N2O–N (kg N input) -1]

EF2CG,Temp = 8 kg N ha-1 a-1 for temperate organic crop and grassland soils EF2CG,Trop = 16 kg N ha-1 a-1 for tropical organic crop and grassland soils EF4 = 0.01 [kg N2O–N (kg N NH3–N + NOx–N volatilised) -1]

EF5 = 0.0075 [kg N2O–N (kg N leaching/run-off) -1] Yield = annual fresh yield of the crop (kg ha-1)

DRY = dry matter fraction of harvested product [kg d.m. (kg fresh weight)-1] (see Table 1) FracBurnt = Fraction of crop area burnt annually [ha (ha)-1]

Cf = Combustion factor [dimensionless] (see Table 1)

RAG = Ratio of above-ground residues, dry matter to harvested dry matter yield, for the crop [kg

d.m. (kg d.m.)-1] (see Table 3)

NAG = N content of above-ground residues [kg N (kg d.m.)-1] (see Table 1)

FracRemove = Fraction of above-ground residues removed from field [kg d.m. (kg AGDM)-1]

FVF = Annual amount of N in sugar cane vignasse and filter cake returned to the field [kg N ha-1], calculated as Yield \* 0.000508.

AG = Above-ground residue dry matter [kg d.m. ha-1]

* + 1. **Crop and site-specific emission factors for N2O emissions from synthetic fertiliser and organic N application**

N2O emissions from soils under agricultural use, in different agricultural fields under different environmental conditions and agricultural land use classes can be determined following the Stehfest and Bouwman (2006) statistical model (hereinafter referred to as ‘the S&B model’):

𝐸 = 𝑒𝑥𝑝(−1.516 + ∑ 𝑒𝑣)

Where:

E = N2O emission (in kg N2O-N ha-1 a-1)

*ev* = effect value for different drivers (see Table 2)

The EF1ij for the biofuel crop i at location j is calculated (S&B model) as: EF1ij = (Efert,ij – Eunfert,ij) / Nappl,ij

The IPCC (2006) factor (EF1) for direct N2O emissions from fertilizer input based on a global mean shall be replaced by the crop- and site-specific EF1ij for direct emissions from mineral fertilizer and manure N input, based on the crop- and site-specific EF1ij, applying the S&B model. Where:

Efert,ij = N2O emission (in kg N2O-N ha-1 a-1) based on S&B, where the fertilizer input is the actual N application rate (mineral fertilizer and manure) to the crop i at location j

Eunfert,ij = N2O emission of the crop i at location j (in kg N2O-N ha-1 a-1) based on S&B. The N application rate is set to 0, all the other parameters are kept the same.

Nappl,ij = N input from mineral fertilizer and manure (in kg N ha-1 a-1) to the crop i at location j

**Table 1 Crop-specific parameters to calculate N input from crop residues3**

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3 Data source: JRC report “Definition of input data to assess GHG default emissions from biofuels in EU legislation” JRC 2019 (EUR 28349 EN). [https://op.europa.eu/en/publication-detail/-/publication/7d6dd4ba-720a-11e9-9f05-](https://op.europa.eu/en/publication-detail/-/publication/7d6dd4ba-720a-11e9-9f05-01aa75ed71a1) [01aa75ed71a1](https://op.europa.eu/en/publication-detail/-/publication/7d6dd4ba-720a-11e9-9f05-01aa75ed71a1)

**Table 2 Constant and effect values for calculating N2O emissions from agricultural fields based on the S&B model**

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**EMISSIONS FROM THE COLLECTION, DRYING AND STORAGE OF RAW MATERIALS**

Emissions from the collection, drying and storage of raw materials include all emissions related to fuel use in the collection, drying and storage of raw materials.

**Emissions from collection**

Emissions from the collection of raw materials include all the emissions resulting from the collection of raw materials and their transport to storage. The emissions are calculated using appropriate emission factors for the type of fuel used (diesel oil, gasoline, heavy fuel oil, biofuels or other fuels).

**Biomass drying**

The cultivation emissions shall include emissions from drying before storage as well as from storage and handling of biomass feedstock. Data on energy use for drying before storage shall include actual data on the drying process used to comply with the requirements of storage, depending on the biomass type, particle size, moisture content, weather conditions, etc. Appropriate emission factors, including upstream emissions, shall be used to account for the emissions from the use of fuels to produce heat or electricity used for drying. Emissions for drying include only emissions for the drying process needed to ensure adequate storage of raw materials and does not include drying of materials during processing.

**ACCOUNTING FOR EMISSIONS FOR ELECTRICITY USED IN FARMING OPERATIONS**

When accounting for the consumption of electricity not produced within the fuel production plant, the GHG emissions intensity of the produced and distributed electricity shall be assumed to be equal to the average emission intensity of the produced and distributed electricity in a defined region, which can be at a NUTS24 region (if available and recognised by the European Commission) or a national level. In case national electric emission coefficients are used, the values from Annex IX shall be used. By way of derogation from this rule, producers may use an average value for an individual electricity production plant for electricity produced by that plant if it is not connected to the electricity grid and sufficient information are available to derive an emission factor.

4 Nomenclature of territorial units for statistics

1. Cropland as defined by IPCC [↑](#footnote-ref-2)
2. Perennial crops are defined as multi-annual crops, the stem of which is usually not annually harvested such as short rotation coppice and oil palm. [↑](#footnote-ref-3)