Support for the implementation of the provisions on ILUC set out in the Renewable Energy Directive

ENER/C2/2018-462 – Lot 2

Prepared for DG ENER – European Commission

– Guidance Handbook for low ILUC-risk Certification V1.0 –

Delivered by ISCC System GmbH (subcontractor under the lead of Guidehouse Netherlands B.V.) as part of Task 2.2 – Application of the methodology in low ILUC-risk biofuels and bioliquids and more specifically Task 2.2.2: Create guidance for auditors

Document Title: LOW ILUC-RISK CERTIFICATION – Guidance Handbook
Version 1.0

Content

1 Introduction 5

2 Scope and Fields of Application 6

3 Low ILUC-Risk Certification 6

3.1 Certification Process 8
3.1.1 Registration and auditing process 8
3.1.2 Management Plan 11

3.2 Sustainability Requirements 16

3.3 Audit-relevant Data 16

3.4 Requirements for Additionality Measures 19
3.4.1 Additionality measures 19
3.4.2 Proving additionality 21
3.4.2.1 Financial attractiveness test 22
3.4.2.2 Non-financial barrier analysis 24
3.4.3 Unused, abandoned or severely degraded land 29
3.4.3.1 Abandoned land 30
3.4.3.2 Severely degraded land 33
3.4.3.3 Other unused land 35
3.4.3.4 Soil sampling 35

3.5 Calculation of additional biomass 35
3.5.1 Calculating the dynamic yield baseline 36
3.5.1.1 Methodology to determine the dynamic yield baseline for annual crops 37
3.5.1.2 Methodology to determine the dynamic yield baseline for perennial crops 39
3.5.2 Calculating Additional Biomass 46

3.6 Requirements for Traceability 47

4 Audit Preparation and Conduct 49

4.1 Requirements for Auditors 49

4.2 Risk Assessment and Management 50

4.3 Documentation 54

4.4 On-site Audits 55

4.5 Non-conformities 57

4.6 Low ILUC-risk certificates 58

5 Group certification 59

5.1 General requirements 59

5.2 Management requirements 60

5.3 Documentation Requirements 61

5.4 Internal Audits 62

5.5 External audits 62

6 Small holders 66

6.1 Basics 66
6.1.1 Definition of small holders 66
6.1.2 The central office 67

Appendix I – Worked examples for how to calculate the dynamic yield baseline and additional biomass ____ *68*

Appendix II – Worked examples of NPV calculation ____ *70*

Appendix III – Soil sampling protocol ____ *72*

Appendix IV – Further guidance on small holder certification ____ *76*

Certification requirements ____ **76**

Traceability and Chain of Custody ____ **76**

Group certification approach for small holder ____ **76**

Preparation, scoping & risk assessment ____ 76

Management & implementation ____ 77

Self-assessment, internal audit and certification ____ 79

GUIDANCE DOCUMENT

Summary of changes

The following is a summary of changes of the content from the previous version. Other changes, e.g. corrections of spelling mistakes, are not listed.

Summary of changes made from Version 0.8 to the current version	Chapter (new)
Updated to refer to IR 2022/996	1
Addition: Certification guidance as add-on to certification by an existing EC-recognised voluntary scheme	2
Addition: Decision tree to show the requirements and the steps for low ILUC-risk certification	3
Addition: Update to IR 2022/996. Further information and guidance on the auditing process (baseline audit, annual audit)	3.1.1
Addition: Update to IR 2022/996. Clarifications and further information on the management plan (e.g. sustainability of the additionality measure, estimation of additional biomass)	3.1.2
Chapter: Sustainability requirements (previously 3.3). Clarification on the sustainability of the additionality measure added	3.2
Addition: Update to IR 2022/996. Further information on the list of additionality measures and the requirements to add new measures	3.4.1
New headline. Update to IR 2022/996. Proving additionality: guidance, in which cases the financial attractiveness test or the non-financial barrier analysis shall be used	3.4.2
Addition: Update to IR 2022/996. Further information on conducting the financial attractiveness test	3.4.2.1
Addition: Update to IR 2022/996. Further information on conducting the non-financial barrier analysis. Definition of "First-of-a-kind measure". Proving the link to the EU biofuels market. Including a "verification guidance" to support companies, VS and auditors	3.4.2.2
Addition: Update to IR 2022/996. Further information on the exemption from proving additionality. Update of the overview on unused land subcategories and consequences for the determination of additional biomass	3.4.3
Minor adjustment on the evidence to be supplied to demonstrate that land is abandoned	3.4.3.1
Addition: Sub-chapters land categories updated. Introduction of thresholds for severely degraded land and requirement for	3.4.3.2

severely degraded land that has had some yield to set a dynamic yield baseline	
New Chapter: Soil sampling	3.4.3.4
Addition: Update to IR 2022/996. Additional biomass can be determined based on raw material harvested and/ or "usable intermediates". New figure to show main principles for the determination of additional feedstock	3.5
Adjustment: Update to IR 2022/996. Determination of the dynamic yield baseline for annual and perennial crops. Updated figures. Global trendline data (factors to use to set the dynamic yield baseline slope) are updated in line with latest FAOSTAT+ data	3.5.1, 3.5.2
Addition: Further information for the determination of additional biomass for perennial crops. Additional guidance for palm oil. More information for group certification approach. Updated guidelines for sugarcane and other perennial crops	3.5.1.2
Deleted: Section on “Sequential cropping”	3.5.1.3
Adjustment: Update to IR 2022/996	3.5.2
Deletion: Chapter on "Verification tools"	
Minor adjustment on the wording in the chapter "Audit preparation and conduct"	4, 4.1-4.4
Deletion of duplicate text sections on baseline and annual audits	4.5
New headline. Update to IR 2022/996. Providing guidance on the low ILUC-risk certificate	4.6
Addition: Further guidance for group certification. Requirements for sub-group certification	5.1
Deletion of parts of sub-chapter on small holders that included duplication (Duplication with other text parts, VS requirements)	6
New: Appendix I: Worked examples for how to calculate dynamic yield baseline and additional biomass	
New: Appendix II: Worked examples of NPV	

New: Appendix III: Soil sampling protocol	
New: Appendix IV: Further guidance on small holder certification	
Deletion: Annex: Examples for how to exclude outliers in the determination of a dynamic yield baseline	

1 Introduction

This guidance document translates the low ILUC-risk criteria into a certification document that can be used alongside an existing EC-recognised voluntary scheme[1] to certify low ILUC-risk biomass. It is developed in the context of the low ILUC pilot project (ENER/C2/2018-462 – Lot 2), conducted by Guidehouse and partners, to support the European Commission in the implementation of the provisions on ILUC set out in Directive (EU) 2018/2011, Delegated Regulation 2019/807 and the additional information on low ILUC-risk certification set out in Annex VIII of Implementing Regulation 2022/996 from 14 June 2022.

In March 2019, the European Commission published Delegated Regulation (EU) 2019/807, supplementing Directive (EU) 2018/2001 (RED II), as regards the determination of high indirect land-use change-risk (high ILUC) feedstock for which a significant expansion of the production into land with high carbon stock is observed, and the certification of low indirect land-use change-risk (low ILUC-risk) biofuels, bioliquids and biomass fuels.

Indirect land-use change (ILUC) can occur when land that was previously used to produce food or feed is used to produce feedstock for biofuels, bioliquids or biomass fuels. As the demand for food and feed still needs to be met, agricultural land might be extended into areas with high carbon stock, such as forests, wetlands and peat lands. That in turn causes additional greenhouse gas emissions. The criteria set out for sustainability and greenhouse gas emissions in Directive 2009/28/EC and Directive (EU) 2018/2001 do not account for such ILUC emissions. However, the REDII places an upper limit on fuels produced from food and feed crops (defined as cereals and other starch-rich crops, sugars and oil crops) of maximum 7% of the energy share in road and rail transport. Specific limits are set at national level, determined by the 2020 national share of food and feed crop-based biofuels plus 1%, up to a maximum 7%.

Furthermore, in Delegated Regulation 2019/807, the European Commission sets out a definition of **"high ILUC-risk"** feedstocks. The definition takes into account the absolute and relative magnitude of land expansion for that crop since a specific reference year compared to the total production area of that crop, and the share of that expansion into high-carbon stock land. These factors are used to determine high ILUC-risk feedstocks, that must be phased out for biofuels in the EU to 2030. High ILUC-risk is defined for a feedstock as a whole, regardless of where it is cultivated.

The Delegated Regulation also sets out criteria to certify **"low ILUC-risk"** biomass, namely biomass from specific farms or plantations that can demonstrate they are producing "additional biomass" compared to a business as usual situation, and therefore avoid ILUC impacts. Low ILUC-risk biomass in this context is biomass grown in addition to already existing stocks, either through **increased yield** on an existing farm or plantation, or **new cultivation** on unused, abandoned or severely degraded land, as defined in the Delegated Regulation. **The additional biomass produced on those farms can be certified as low ILUC-risk. This guidance document includes**

[1] https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en

approaches to certify any type of feedstock. When the approach is used to certify feedstocks that are defined as high ILUC-risk, the resulting biofuels, bioliquids or biomass fuels can be considered exempt from the high ILUC-risk phase out.

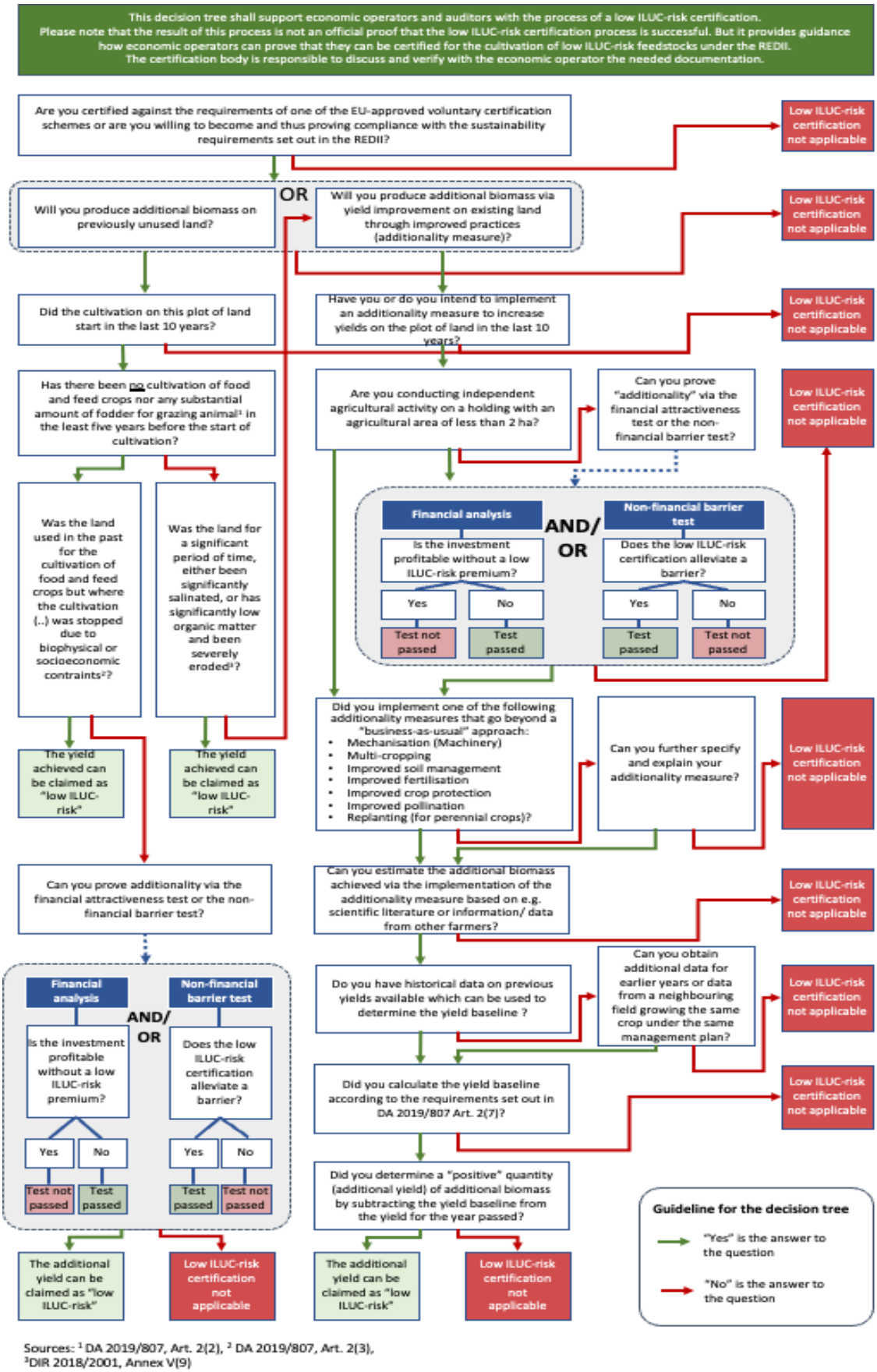
Annex VIII of the Implementing Regulation 2022/996 from 14 June 2022 provides further information on low ILUC-risk certification, e.g. on how to demonstrate the production of additional biomass on unused, abandoned and severely degraded land, how to determine yield increase measures and how to prove the additionality of the yield increase measures.

2 Scope and Fields of Application

This document lays down the general principles for the certification of low ILUC-risk feedstocks and the biofuels, bioliquids and biomass fuels derived from them. Furthermore, it describes the scope and application of the set requirements as well as the system boundaries. Further, it includes a description of the use of relevant measures and the respective applications to be used by auditors in order to verify/ assess additionality measures applied on the different types of land. Specifications for group auditing and small holders are provided, as well as requirements for auditors and auditees. This certification guidance is designed to be used as **an add-on to certification under an existing EC-recognised voluntary scheme**. Therefore the guidance for auditors and group certification guidance here focus on essential aspects that must be incorporated in a scheme to certify low ILUC-risk.

3 Low ILUC-Risk Certification

The following figure summarizes all requirements and steps for low ILUC-risk certification. The decision tree shall support farmers and economic operators, as well as auditors, with the process of low ILUC-risk certification. The overview can be used by farmers and other economic operators to gain an overall understanding of all criteria and to identify all documents and data that must be available for the audit.



Sources: [1] DA 2019/807, Art. 2(2), [2] DA 2019/807, Art. 2(3), [3]DIR 2018/2001, Annex V(9)

Figure 1.: Decision tree for low ILUC-risk certification

The main principles of the low ILUC-risk certification are described in Articles 4, 5 and 6 of Delegated Regulation 2019/807. Further guidance is set out in Annex VIII of Implementing Regulation 2022/996. The purpose of this certification guidance is to translate the requirements laid out in these Articles into criteria to be verified at the farm/ plantation and/ or the first gathering point / central office.

3.1 Certification Process

3.1.1 Registration and auditing process

Prior to any certification or audit activities, the certification body (CB) must have concluded a certification agreement with the economic operator interested in a low ILUC-risk certification. After the CB has concluded a certification agreement with the economic operator and prior to any certification or audit activities, the economic operator must register with a voluntary scheme (VS) recognized by the European Commission (EC).
A copy of the registration will be sent to the respective CB. Based on the registration with the voluntary scheme, the CB can identify the activities undertaken by the economic operator that are relevant for a low ILUC-risk certification, and which represent the relevant requirements to be verified during the audit.
To start the certification process, an economic operator has to submit an application to a certification body recognised by a voluntary scheme for low ILUC-risk biomass certification. The applicant may be a farm, a first gathering point or a group manager, acting on behalf of a group of farmers. The low ILUC-risk certification application shall contain at least the following information:

(a) the name and contact details of the applicant or applicants, including where relevant the members of a group for group certification[2];

(b) a description of the low ILUC-risk additionality measures envisaged, including:

(i) details on the delineated plot where the additionality measure will be implemented, including current land use, current management practices, current plot yield data, and if applicable a statement on whether the land is unused, abandoned or severely degraded;

(ii) description of the additionality measure(s) and an estimate of the additional biomass that will be produced following its application (either through a yield increase or production on unused, abandoned or severely degraded land);

[2] If applying for group certification, the application should include the name and contact details of the group lead and the name, contact details and locations of the farms/plantations that are part of the group.

(c) information on any existing Commission-recognised voluntary scheme certification (name of the voluntary scheme, certificate number, status and validity period).

If the application is made after the additionality measure(s) has/have been implemented, only the additional biomass produced after the date of low ILUC-risk certification may be claimed as low ILUC-risk.

The certification application is ideally made before implementation of the additionality measure, but low ILUC-risk certification can be applied for up to 10 years after implementation of an additionality measure if appropriate data and evidence are available to allow for certification. This would include, that the mandatory information for registration as well as data on the delineated plot since the implementation of the additionality measure is documented and can be verified.
The CB appoints an auditor to conduct an onsite baseline audit. The aim of the baseline audit is to verify the management plan and establish and document the dynamic yield baseline against the management plan. As part of the baseline audit, the certification body shall assess whether the additionality measure(s), are expected to lead to an increase in yields and compliance with the sustainability criteria set out in the RED II.

The auditors carrying out the baseline audit on behalf of the certification body shall indicate in the baseline audit report any sustainability issues, stemming from the implementation of the additionality measures, which may potentially constitute a breach of the national or regional legal framework or do not comply with local specific conditions. This includes to ensure that the additionality measure shall not compromise future growing potential by creating a trade-off between short-term output gains and mid/ long-term deterioration of soil, water air quality and pollinator populations. Further, the additionality measure shall not have a negative impact on the soil quality and soil carbon stocks. Any sustainability issues shall be included in the annual audits.

In the case of applications including additionality measures to be applied after certification, the baseline audit, the results of the additionality test, and the dynamic yield baseline shall be valid for 10 years (starting from the implementation of the additionality measure). In the case of perennial crops, an economic operator can choose to delay the start of the 10-year validity period by up to 2 years in the case of operational additionality measures, or up to 5 years in the case of replanting, to allow time for the yield increase measure to take effect.

Where the additionality measures have been already applied before certification, the baseline audit, the results of the additionality test, and the dynamic yield baseline shall be valid for 10 years from the starting year of the implementation of the additionality measure. To set the baseline, sufficient data and evidence needs to be available from before the additionality measure was taken to provide the same level of assurance. The baseline may be accepted for additionality measures taken not more than 10 years before, as long as sufficient data and documentary evidence is available providing the same level of assurances of a situation where

the baseline audit was conducted before the implementation of the additionality measure(s).

For the **baseline audit**, the economic operator will need to prepare and make available all the information and documentary evidence required in the management plan. This is fundamental for the auditor to check the additionality test and the calculation of the dynamic yield baseline, against which the volume of additional biomass can be calculated.

Once the baseline audit has been conducted, an audit report and a certificate have to be issued by the CB and sent to the voluntary scheme. If all requirements are met by the economic operator, the certificate will be published. Verification audits for low ILUC-risk certification take place annually (annual additionality audits), analogously to the audits conducted for complying with RED II requirements.

For the **annual additionality audits**, the auditor will need to check that the additionality measure is being implemented and that it is being implemented sustainably, to verify the calculation of the additional volume of biomass, and to check that appropriate low ILUC-risk claims have been made for the preceding year.

- The auditor must check that the **management plan** is being followed and the **additionality measure is being implemented sustainably**. Significant deviations to the management plan or changes to the additionality measure must be notified by the economic operator to the certification body prior to the audit and may result in the need for a new management plan and baseline audit. In principle, minor adjustments to the additionality measure could be possible, e.g. small adjustments to the fertiliser regime applied, but the auditor needs to be able to verify that the additional biomass is the **direct result** of applying the additionality measure (Delegated Regulation, Article 2(6) definition of 'additional feedstock'). A small incremental change to the fertiliser regime made each year shouldn't therefore be allowed if this results overall in a significant change to the additionality measure.
- If a **certification audit** is conducted **before an additionality measure is taken**, in the following audit, auditors should compare costs incurred to costs predicted (and used as the basis for the financial attractiveness test) to ensure firstly that the additionality measures that involved a cost were actually taken and secondly that the predicted costs were a reasonable estimate such that the project should indeed have passed the additionality test. If the actual additionality measure in practice deviates significantly from the project plan and the auditor considers that the measure would not pass the additionality test in practice, then the auditor can withdraw the low ILUC-risk certificate.
- The **sustainability of the additionality measure** is primarily assured by the auditor through the continued certification to the main voluntary scheme.

In addition, we ask the auditor to flag any potential sustainability risks from the implementation of the additionality measure that they come across during the baseline audit and these risks should be checked as part of the additionality audit.

- The auditor must check the **calculation of the additional biomass** and the **claims made**. If observed yields do not exceed the dynamic yield baseline in a certain year and there is therefore no additional biomass, that is not automatically a non-conformity, but the economic operator would not be able to claim any low ILUC-risk biomass that year.

Note that whilst it is a precondition that low ILUC-risk certification is used as an add-on to an existing certificate by a voluntary scheme recognized by the EC under the RED II, it is not a requirement that the economic operator was already certified to the voluntary scheme before applying for low ILUC-risk certification. The baseline audit for low ILUC-risk certification could, in principle, be conducted at the same time as an initial certification audit to a voluntary scheme.

Furthermore, some of the aspects required for low ILUC-risk certification may already be checked in the context of the existing voluntary scheme certification, such as economic operator identification, land tenure etc. Where this is the case, this data should still be documented in the management plan but does not need to be verified again. Similarly, general administrative elements can be adopted from the main certification to the voluntary scheme used for the RED II sustainability certification.

3.1.2 Management Plan

Once the low ILUC-risk application is accepted, the economic operator shall develop a management plan and submit it to the certification body. The management plan shall build on the information in the certification application, and include:

1) Definition of the delineated plot of land

The characteristics of the delineated plot of land shall allow the plot to be identified over the years to ensure that a comparison is possible between the business-as-usual crop system and the crop system with the additionality measure applied.

In principle we assume the delineated plot is a farm (all land areas managed / cultivated), but economic operators can define it at the field level if they wish. A delineated plot must be described using the following parameters:

1. Ownership/ Status of Lease;
    a. Description of recent history at minimum 3 years before the implementation of the additionality measure
    b. Acquisition dates as per contract of a newly acquired plot of land (in the case of a purchase or a lease).

c. Description of current use of land and recent (3-5 year) history, to supplement the historic yield data provided, in the case of a newly acquired plot of land;

d. Certification status of the farm, where delineated plot is identified: individually certified, part of a first gathering point, member of a group of farms/ plantations

2. Description of delineated plot (including for example the plot number where relevant);
    a. Plot location (geographic coordinates with a precision of 0.1 metres for each measuring point);

3. Surface area (in ha, 0.1 ha resolution); in the case of small holders, on whose behalf an exemption from the financial additionality test is sought, the area should be smaller than 2 ha;[3]

The delineated plot needs to be described for each plot of land upon which an additionality measure is applied.

If the delineated plot is part of a crop rotation system, the crop rotation system needs to be described further. This includes the number of land plots that are part of the crop rotation system, the plot locations (geographic coordinates with a precision of 20 metres for each measuring point), surface areas (in ha) and target crop and crops grown on each plot over the last three to five years (in line with the historical yield data provided).

The demonstration of a clear title to land in accordance with national practice and law is a precondition, which is normally verified as part of the normal voluntary scheme certification. In the case of unused, abandoned or severely degraded land, the economic operator might not technically own the land at the time they initially apply for certification, but to become certified they will need to provide satisfactory evidence that they will have the right to cultivate crops on the land.

2) Description of additionality measure(s)

Additional feedstock can only be claimed and calculated after the implementation of an additionality measure. The additionality measure must be clearly described. An economic operator seeking certification must include information on:

[3] Delegated Regulation 2019/807, Article 2(9): "'small holders' means farmers who conduct independently an agricultural activity on a holding with an agricultural area of less than 2 hectares for which they hold ownership, tenure rights or any equivalent title granting them control over land, and who are not employed by a company, except for a cooperative of which they are members with other small holders, provided that such a cooperative is not controlled by a third party;"

- The situation of the farm/plantation/plot before the additionality measure was implemented. This should be a qualitative description of current practices, specifically relevant to the envisaged additionality measure.
- A description of the additionality measure, the timeline over which it was or will be applied and whether it will be combined with other additionality measures.
- An explanation of the expected future yield growth.

A non-exhaustive list of examples of actions that could be certified as additionality measures can be found in chapter 3.4 of this document. In the case of a new measure not yet included in this list, the economic operator will contact the VS for the measure to be evaluated and considered to be added to the list.

3) Demonstration of sustainability of additionality measure against the requirements of the RED II

The low ILUC-risk certification must comply with all sustainability and greenhouse gas emissions saving requirements laid out in the EU RED II. In this regard, additionality measures must comply with the EU RED II criteria as well. Therefore, a low ILUC-risk certificate can only be issued to farmers that are certified under one of the recognized voluntary certification schemes for land area and an operational unit including all delineated plots (NB. The economic operator can already be certified to a recognized voluntary scheme, or they could become verified as part of the low ILUC-rick certification process). The certification status of the economic operator will be checked as part of the baseline audit and on an on-going basis as part of the annual audits, which should be conducted in line with the existing voluntary scheme audits.

The additionality measure shall not compromise future growing potential by creating a trade-off between short-term output gains and mid/long-term deterioration of soil, water and air quality and pollinator populations. The additionality measures shall not result in homogenisation of the agricultural landscape through removal of landscape elements and habitats such as solitary trees, hedgerows, shrubs, field edges or flower strips. Furthermore, the additionality measure shall not have a negative impact on the soil quality and the soil carbon stock.

In addition, the local auditor should flag any potential sustainability risks from the implementation of the additionality measure that they come across during the baseline audit. These risks would then be checked as part of the additionality audit. For example, if the additionality measure is an irrigation programme, auditors might flag water use as a potential water risk. Economic operators should show that they have measures to identify and mitigate any risks in the management plan and implementation of this should be checked as part of the additionality audit.

4) Demonstration of additionality (if relevant)

An additionality measure can only be considered low ILUC-risk if it increases productivity beyond any increase which would already be expected in a business-as-usual scenario. This is specified as measures that "become financially attractive or face no barrier preventing their implementation only" because the resulting biofuels can be counted towards REDII targets (see Delegated Regulation Article 5.1.(a)). Therefore, economic operators have two options to prove the additionality. The chosen options and the respective data and calculation must be included in the management plan and verified during the baseline audit.

Additionality does not have to be demonstrated by small holders (see also chapter 7) or for measures on land that is abandoned or severely degraded, but it is a requirement for measures which bring unused land (that is not abandoned or severely degraded) back into production.

5) Determine the dynamic yield baseline

The economic operator must calculate the dynamic yield baseline and document this as part of the management plan. The dynamic yield baseline is used to determine the business as usual situation, compared to which the amount of additional biomass is calculated. The dynamic yield baseline must be both crop-specific and specific for each delineated plot.

For yield increase measures, plot-specific historic crop yield data is used to calculate the dynamic yield baseline. For perennial crops, the dynamic yield baseline also considers the yield curve over the lifetime of the crop. Detailed information on the calculation methodology can be found in chapter 3.5.1.

- **For yield increase: establish historic crop yield**

  Historic crop yields are needed to calculate the business-as-usual crop yields and determine the dynamic yield baseline. Business-as-usual is the scenario expected in the absence of the additionality measure. The historic data must be crop-specific and derived from the given delineated plot of land. The data set must include historical crop yields starting at least three years before the implementation of the additionality measure.

- **For unused, abandoned and severely degraded land: demonstrate land status**

  The economic operator needs to describe and provide evidence for the land status as part of the management plan. Land status will be checked as part of the baseline audit by the certification body at the beginning of the certification process.

  If farmers are cultivating on previously abandoned or severely degraded land, this qualifies as an additionality measure without a financial or barrier analysis. For cultivation on unused land that is not abandoned or severely degraded, this must pass the financial or barrier analysis to qualify as

additional. More information on land status determination can be found in chapter 3.4.4.

6) Estimate the additional biomass yield per year

The economic operator shall estimate the effectiveness of the additionality measure. This is useful to estimate how much additional biomass is expected to be produced as the result of the introduction of the additionality measure. In addition, the estimate of additional biomass is needed as input for the financial attractiveness analysis for the proof of additionality.

By comparing the dynamic yield baseline to the expected yields after the additionality measure is implemented, the additional biomass yield can be estimated and documented in the management plan. However, note that the actual volume of certified low ILUC-risk biomass is determined based on the actual biomass yields achieved after implementation of the additionality measure and will therefore vary each year.

The economic operator will have to demonstrate that the management plan sets reasonable expectations on the yield increase by referring to, for example, scientific literature, experience from field trials, information from agronomy companies, seed/ fertiliser developers or simple calculations. Satisfactory evidence supporting the expected yield increase of the additionality measure applied is needed for the project to be certified. As part of the annual audits, the auditor should also check that the achieved volume of additional biomass is in line with expectations and seek justification if it is not.

If certification is sought for an additionality measure already taken in the past (up to 10 years previously), the additional biomass yield can be calculated based on the documented yields achieved after the implementation of the measure. Note that whilst this allows the actual volume of low ILUC-risk biomass to be calculated, low ILUC-risk biomass can only be claimed in the market for biomass supplied after low ILUC-risk certification has been awarded (retrospective claims cannot be made for biomass supplied previously).

The management plan must allow a comparison to be made between the use of the delineated plot before and after implementation of the additionality measure.

In the case of agricultural improvements, the agricultural practices applied, machinery and means before and after the additionality measure has been applied shall be documented in detail as part of the management plan. This shall allow a comparison in order to:

(i) Determine whether an additionality measure has been implemented;

(ii) Evaluate if that additionality measure is considered to be additional compared to a "business as usual" development (proof of additionality)

The implementation of the management plan shall be subject to annual audits to verify that the content of the management plan is implemented correctly and that

the quantities of additionally produced and claimed biomass for the purposes of low-ILUC certification, against the dynamic yield baseline, are correct.

3.2 Sustainability Requirements

Farms and plantations looking for a certification of low ILUC-risk biomass have to comply with the sustainability requirements laid out in Article 29 of Directive (EU) 2018/2001, specifically the relevant criteria for the protection of land with high biodiversity value, high carbon stock and peatland, the criteria for the protection of soil quality and soil organic carbon, and the greenhouse gas emission savings from the use of biofuels, bioliquids and biomass fuels. The whole farm/ plantation (including all plots/ fields managed and cultivated) must comply with these mandatory sustainability requirements; "cherry picking" is not allowed. All emissions must be documented and passed on to the recipient of the low ILUC-risk material (i.e. the first gathering point).

The additionality measure shall not compromise future growing potential by creating a trade-off between short-term output gains and mid/long-term deterioration of soil, water, air quality and pollinator populations. Further, the measure shall not have a negative impact on the soil quality and soil carbon stock.

The reference for any land status determination is January 2008. If land had already been cropland in January 2008, the use of raw material from that land is in line with low ILUC-risk certification. Cropland includes fallow land, i.e. land set to rest for one or several years before being cultivated again.[4]

The certification of these "core" sustainability criteria from Directive (EU) 2018/2011 shall be verified as part of the main certification to an EC-recognised voluntary scheme.

3.3 Audit-relevant Data

Verification of compliance must be provided by independent third-party certification bodies and auditors. Some basic operating and audit specific data must be in place for an audit. **Basic and audit specific data** include:

- Name of the certification body (CB)
- Name of the lead auditor (and members of the audit team)
- Place, date and duration of the audit
- Company representatives present
- Relevant service providers or sub-contractors
- Name of ILUC expert within the audit team

[4] According to Commission Regulation (EC) No 1200/2009 fallow land is land included in the crop rotation system, whether worked or not but with no intention to produce a harvest (e.g. bare land bearing no crops at all, land with spontaneous natural growth, which may be used as feed or ploughed in land sown exclusively for the production of green manure (green fallow))

- Applied overall risk level during the audit (risk level regarding documentation and sampling)
- Major risk indicators and the tools and information sources used to indicate it
- Risk level applied regarding a flawed documentation of the operational unit (i.e. for traceability)
- Chosen option to report GHG emissions on farm level (i.e. actual, disaggregated default values, default values, NUTS2)

Data to be provided on the respective operational unit (farm/ plantation or first gathering point) include:

- Company name and address (certificate number if applicable)
- Contact details of the company (name, phone, email)
- Geocoordinates (latitudes and longitudes in decimal degrees)
- Contact person (name, phone, email)
- Type of operation to be audited
- For farms/ plantations: statement if audited as part of a sample or individually
- Signature and confirmation of the producer, that the farm complies with all requirements relevant for the certification of low ILUC-risk materials

For the farm/ plantation specific information must be provided in addition for the certification of low ILUC-risk raw materials, such as:

- Status of the farm/ plantation (individually certified, part of first gathering point, member of group of farms/ plantations)
- Prior certification of the farm/ plantation
- Type of agricultural operation (smallholder, (individual certified) farm, plantation)
- Depicted as traverse in geographic coordinates:
    - Total area of the agricultural operation (total area of the agricultural unit, total size of the land area cultivated)
    - Total area of agricultural operation where additionality measure(s) were applied (delineated area) in ha
- Low ILUC-risk additionality measure applied and date of initial (or planned) application
- Date of sowing and harvesting
- Name and type of crops (annual/ perennial) relevant for low ILUC-risk certification including date of sowing and harvesting
- Total amount harvested (metric tons, short: mt) for the relevant crop
    - Baseline audit: use of historical data

    - Annual additionality audits: use of actual data
- GHG emissions in kg CO2eq/mt
- Average yields of the past three to five years (mt/ha) for the relevant crops
- Calculation of the dynamic yield baseline
- Total amount of additional feedstock produced
    - Baseline audit: use of estimates
    - Annual additionality audits: use of actual data
- Demonstration of land status (if measures include planting on abandoned or severely degraded land)
- Demonstration of sustainability requirements in accordance with RED II (proven by valid sustainability certification under a voluntary scheme)
- Records of the actual crop yield achieved each year on the delineated plot, based on the dynamic yield baseline as a reference

In addition, every producer has to fill out the management plan as described.

The first gathering point must have additional information in place as well, mainly focusing on:

- Number of farms/ plantations participating in the certification of low ILUC-risk biomass
- Total number of smallholders/ individual farms/ plantations applying low ILUC-risk measures
- Overall risk level applied
- Sample sizes for smallholders/ individual farms/ plantations
- Total agricultural area of all low ILUC-risk compliant smallholders/ individual farms/ plantations and total area of the agricultural operation where additionality measure(s) were applied (delineated area)
- Biomass received as low ILUC-risk from farms/ plantations during previous certification period
- Data for each farmer on starting date of low ILUC-risk measures, total biomass supplied per crop, total size of farm, total size per crop, yield per crop (mt/ ha), average yield for the past three years, reference value "additional yield", total amount of additional yield

Every economic operator to be certified under low ILUC-risk certification must have a management plan in place including detailed information on the contents described in chapter 3.1.2.

The above-named data need to be present at the beginning of each audit to ensure a smooth verification of all relevant documentation. Only farms/ plantations that have completed and signed the management plan and passed a successful baseline audit are allowed to deliver low ILUC-risk material.

3.4 Requirements for Additionality Measures

3.4.1 Additionality measures

Low ILUC-risk biomass needs to be produced as the result of an "additionality measure".[5] Additionality measures are measures that go beyond common agricultural practices. Table 1 contains a non-exhaustive list of the types of yield increase additionality measures that economic operators can apply. Measures, or combinations of measures, shall boost output without compromising sustainability. The additionality measure shall not compromise future growing potential by creating a trade-off between short-term output gains and mid/long-term deterioration of soil, water and air quality and pollinator populations. The additionality measures shall not result in homogenisation of the agricultural landscape through removal of landscape elements and habitats such as solitary trees, hedgerows, shrubs, field edges or flower strips. Furthermore, the additionality measure shall not have a negative impact on the soil quality and the soil carbon stock.

Common agricultural practices can differ between crops and regions. The inclusion of a measure on this list does not automatically mean that a farmer implementing this measure is eligible for low ILUC-risk certification. Auditor always needs to judge whether this is a measure that will help the farmer to achieve additional yield.

Economic operators have to be introducing one of these measures and pass the additionality test in section 3.4.2.

If a measure is not on the list, the auditor shall contact ISCC prior to the initial audit to include eligible measures.

In principle, adding higher energy yielding crops in place of a food crop is not an additionality measure and thus cannot be certified as low ILUC-risk.

Table 1. : Example list of additionality measures to be applied by farmers

Additionality measure category	Additionality measure	Description
Mechanisation	Machinery	Adoption of machinery that reduces/complements existing workforce input to boost output or reduce losses. This could include sowing, precision farming, harvesting machinery or machinery to reduce post-harvest losses.

[5] Delegated Regulation 2019/807, Article 2(5): 'additionality measure' means any improvement of agricultural practices leading, in a sustainable manner, to an increase in yields of food and feed crops on land that is already used for the cultivation of food and feed crops; and any action that enables the cultivation of food and feed crops on unused land, including abandoned land, for the production of biofuels, bioliquids and biomass fuels

Management	Soil management	Mulching instead of ploughing, low tillage
	Fertilisation	Optimisation of fertilisation regime, use of precision agriculture
	Crop protection	Change in weed, pest and disease control
	Pollination	Improved pollination practices
	Other	Leaves room for innovation, combinations of measures and unforeseen developments
Replanting (for perennial crops)[6]	Choice of crop varieties	Higher yielding or faster growing varieties, better adaptation to eco-physiological or climatic conditions

A verifiable additionality measure needs to be applied to be able to claim that additional biomass has been produced on a delineated plot of land. Furthermore, the additionality measures must meet **at least one** of the following conditions:

- They become **financially attractive OR face no barrier** preventing their implementation only because their feedstocks can be counted towards the targets for renewable energy under Directive 2009/28/EC or Directive (EU) 2018/2001 (see 3.4.2);
- They allow for cultivation of food and feed crops **on abandoned land or severely degraded land** (see 3.4.3);
- They are **applied by small holders** (see 6).

Only additional yield above the dynamic yield baseline may be claimed as low ILUC-risk. An economic operator may apply more than one additionality measure over the years. Where two or more additionality measures are applied together in the same year on the same delineated plot of land, the additional biomass produced as a result shall be evaluated against the same dynamic yield baseline. The additional biomass may be certified as low ILUC-risk under the same certificate.

Furthermore, an additionality measure may only be certified if it aims to achieve additional yields as a result of an improvement in agricultural practice. If a measure is applied that only aims to improve the sustainability of the plot, without improving yields, it is not deemed an additionality measure. This is not the case with cultivation on unused, abandoned or severely degraded land, in which case the cultivation itself is the additionality measure.

If two or more additionality measures are applied together in the same year on the same delineated plot of land, the additional biomass produced as a result is evaluated against the same dynamic yield baseline set according to the methodology outlined in 3.5. The additional biomass can be certified as low ILUC-

[6] Replanting at the end of the crop lifetime is always necessary for a perennial crop. For replanting to count as an additionality measure, the economic operator must prove that their replanting goes beyond 'business as usual'

risk under the same certificate. All additionality measures need to be included and documented in the management plan.

Where two or more additionality measures are applied at different times on the same delineated plot of land, the economic operator may choose either of the following options:

(a) update the dynamic yield baseline and the additionality test to create a new baseline valid for another 10 years;

(b) keep the original validity period of 10 years for the dynamic yield baseline and the additionality test following the initial certification year.

Additionality measures need to be taken no longer than 10 years before the low ILUC-risk certification.

During the audit, it must be provable that the applied additionality measure(s) could lead to an additional yield. This can be done e.g. by comparing the calculated dynamic yield baseline with the feedstock yield average of the last three years and the estimated additional biomass. Further, the auditor checks the claims included in the financial and/or barrier analysis as part of the baseline audit.

The measures applied are made public for reasons of transparency. Proof that measures could lead to a yield increase must be available. Further, it must be shown that the financial attractiveness for farms is given to implement the respective additionality measures to produce feedstock that can be counted towards the RED II targets.

Please keep in mind, that the difference between best practices and additionality measures needs to be acknowledged. Best management practices will differ between small holders and agribusinesses and so will additionality measures. When comparing small holder plantations against optimised agri-business owned plantations, where best practices are already used, one needs to consider the difference between the type of additionality measures that can be applied. For example, increased mechanisation will not necessarily be seen as an additionality measure in the context of an agribusiness, but this could be the case for a small holder plantation.

3.4.2 Proving additionality

For the purposes of certifying biomass as low ILUC-risk, economic operators must prove that they have applied measures effectively increasing feedstock productivity beyond a business-as-usual scenario. Where such measures are applied on abandoned or severely degraded land or by small holders, the baseline audit shall verify that economic operators comply with the appropriate requirements described in this document.

In all other situations, proof of additionality shall be provided by carrying out a financial attractiveness (section 3.4.2.1) or barrier analysis assessment (section 3.4.2.2). The two tests have equal weight.

In principle, any barrier whose cost can be estimated shall be included in the financial attractiveness rather than in the non-financial barrier analysis. If this is not possible, the barrier should be tested in the barrier analysis.

For a project to be eligible for low ILUC-risk certification, an economic operator only needs to pass one of the two types of additionality test.

Measures shall be eligible for the purpose of low ILUC-risk certification only where either their financial attractiveness test is negative, that is to say a negative net present value (NPV) of the investment without the inclusion of a market premium, or they demonstrate the presence of non-financial barriers that can be overcome only because the biofuels, bioliquids and biomass fuels produced from the additional feedstock can be counted towards the targets for renewable energy set out in the RED II.

3.4.2.1 Financial attractiveness test

The financial attractiveness test needs to demonstrate that the investment required for the additionality measure becomes financially attractive only if the resulting additional yield is certified as low ILUC-risk. The analysis shall consist of a simple financial analysis of the envisaged low ILUC-risk additionality measure investment. The financial attractiveness test should be done by the owner of the certificate that needs to prove additionality[7].

In case the additionality measure is implemented after the initial audit, the auditor must verify in the following, annual audit, that the costs were actually incurred and that the estimation of additional biomass was realistic, such that the measure met the additionality test.

The test shall include only those costs and yields that are directly related to the additionality measure investment. This also includes costs for research and development, but only if those costs can be directly linked to the additionality measure applied and if those costs can be reliably quantified, e.g. for seedling development. Normal operating costs of the entire farm shall therefore not be included in the analysis. The costs and revenues included in the test shall be related to the preparation, implementation, maintenance and decommissioning of the additionality measure that would not otherwise have been incurred.

Financial attractiveness arises from a business case in which the net present value (NPV)[8] of the investment is positive, which means that the investment may be conducted by the economic operator itself. **As a result, only measures for which the business case analysis is negative (without the inclusion of a low ILUC related premium for the certified biomass) shall pass the financial additionality test** and

[7] In case the FGP is not in the position to conduct the test (e.g. missing data), this can be done by the farmer

[8] NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning to analyse the profitability of a future investment or project. Source: https://www.investopedia.com/terms/n/npv.asp

become eligible to be certified as low ILUC-risk. Outcomes above zero (a positive NPV) are eligible only if they pass the non-financial barrier analysis.

The formula that must be used to calculate the NPV of an investment is:

$$NPV = \sum \frac{P - L}{(1 + i)^t}$$

Where:

P = expected income from additional biomass (estimate of additional biomass x feedstock sales price without low ILUC premium)

L = cost of additionality measure (CAPEX and OPEX)

i = discount rate

t = time period

The parameters used in the NPV calculation shall be in line with the data included in the management plan.

The following parameters shall be included in the NPV calculation:

- Estimate of additional biomass volume
- Feedstock sales price [currency/tonne]
    - The feedstock sales price may be a single number extrapolated over the lifetime of the additional yield investment;
    - This single number may be based on an average of actual historical feedstock sales values achieved by the economic operator. The average value shall be based on data for the same three years that the historical yield data used to set the dynamic yield baseline;
    - In the event of introducing a new crop, for which the economic operator does not have actual price data, it could be appropriate to base this value on FAOSTAT price data[9].
- Discount rate to be used:
    - 3.5 % for high income countries[10] and
    - 5.5 % for all other countries
- Lifetime of the investment
    - A lifetime of up to 10 years[11] shall be used, in line with the lifetime of the low ILUC-risk certification (baseline validity);

[9] We recommend to use FAOSTAT Producer Prices, source: http://www.fao.org/faostat/en/#data/PP
[10] OECD countries
[11] Some measures may have a shorter lifetime, e.g. fertiliser cost would have a lifetime of 1 year if applied every year

- in some cases, the maximum lifetime of the investment may be set at 25 years based on the typical lifetime of perennial crops (that is to say, oil palm tree, in the case of oil palm replanting);
- Investment cost related to the additionality measure [CAPEX + OPEX][12]

The NPV calculation shall not take into account actual costs for borrowed money, loans and debt servicing payments for the calculation of the net cash inflow-outflow for the additionality measure. Those are covered by the discount rates of 3.5 and 5.5 %, respectively. Financial attractiveness can be assessed for harvested biomass and for processed feedstocks, if the First Gathering Point is also the processing unit (e.g. palm oil mills).

3.4.2.2 Non-financial barrier analysis

The non-financial barrier analysis shall only cover non-financial project barriers that prevent the implementation of the additionality measures in case of no low ILUC-risk certification. Any barrier whose cost can be estimated shall be included in the financial attractiveness rather than in the non-financial barrier analysis.[13]

The economic operator (EO) that plans the additionality measure is responsible for justifying the existence of non-financial barriers. The EO shall provide all the necessary verifiable evidence to support the claim and demonstrate how low ILUC-risk certification would ensure that non-financial barrier is overcome. In addition, the EO shall provide evidence that the additionality measure was made possible by EU value signal e.g. by an investment from an EU company being active in the bioenergy market, previous sales to EU bioenergy markets, support from/ by an EU biofuels company, a supply contract with an EU biofuels company and/ or for small farms a link to an international agricultural trader.

The auditor decides whether the documents presented support the argumentation and whether the test is passed.

The validity of the operator's claim shall be assessed and validated by the baseline audit before issuing a low ILUC-risk certificate. The EO must explain the non-financial barrier and how he overcame it. The EO should provide relevant evidence, e.g. contracts, reports, documents describing the non-financial barrier, the historical and actual situation. The auditor can verify these documents and assess if the non-financial barrier analysis is passed. The findings of the assessment must be documented as part of the audit documentation and issued to the voluntary scheme. Voluntary schemes have the possibility to request further documents in case of insufficient documentation of the assessment.

[12] Demonstrable costs for research and development can be taken into account
[13] Costs should be documented

The following non-exhaustive list summarizes barriers that may inhibited EOs in the past to implement a certain additionality measure:

(a) **No access to finance**: EOs may be able to demonstrate that they face a barrier to gain access to finance to invest in the additionality measure without low ILUC-risk certification in the past. This can be done via e.g. showing documents on the refusal of loan application (using a bank statement, a proposal from the bank or a documentation on the consulting process for financing the additionality measure), showing offers of finance of prohibitive rates without the low ILUC-risk certification and/ or demonstrating their financial situation documenting that the investment in the additionality measure can only be conducted via external financing. It must be shown that low ILUC-risk certification convinced the financial institution to provide the EO a loan to finance the additionality measure.

Verification guidelines:

- Can you demonstrate the refusal of loan application via e.g. a bank statement, a proposal from the bank or a documentation on the consulting process for financing the additionality measure?
- Can you demonstrate offers of finance of prohibitive rates without the low ILUC-risk certification based on the estimated investment costs?
- Can you demonstrate that the investment in the additionality measure can only be conducted via external financing?
- Can you demonstrate that low ILUC-risk certification enabled the access to finance from a bank or another organisation?

(b) **No access to a relevant input(s):** EOs may argue that a relevant input or measure is not accessible in their region, meaning for example not within a realistic distance from the farm. This could be e.g. a specific machinery, fertilizer or plant protection product that were not previously available in a region. Another example could be missing infrastructure that has prevented access to the input in the past. The relevant input must be decisive for the implementation of the additionality measure and the EO must demonstrate that the input increases the productivity of the land use and increases yields. Further, the EO must demonstrate since when he had access to the input and why the input was not available before. This can be done e.g. via market data, market reports, invoices.

Verification guidelines:

- Can you demonstrate that the relevant input is decisive for the implementation of the yield increase measure?
- Can you demonstrate since when you have access to the input and why the input was not available before (e.g. via market data or market reports, invoices, records)?

- Can you demonstrate that the low ILUC-risk certification enables the access to the input?

{Guidance: (previously) high costs for the input is not an eligible barrier. Transport restrictions, missing logistical options, missing infrastructure should be explained/ documented in detail}

(c) **Access to labour:** An EO may be able to demonstrate that they were not able to recruit sufficient qualified staff for the cultivation and harvesting period. Low ILUC-risk certification has helped to recruit additional qualified staff. To show the shortage of labour in the region, the EO can use statistical data on the labour market, historical data, employment statistics, show that advertised jobs at reasonable rates are going persistently unfilled, previous recruitment activities and data on the reduction of workers.

Verification guidelines:

- Can you demonstrate that you are short on labour and that this is not related to financial aspects (wages, labour costs) but for other, non-financial reasons e.g. via statistics and historical data on workers/ qualification, wages, (regional) employment statistics, no/ low number of job applications due to recruitment activities, data on the reduction of workers?
- Can you demonstrate that the low ILUC-risk certification enables the access to labour?

(d) **Legal restrictions:** An EO may be able to prove that there are legal restrictions on the land which prevent certain forms of management that could increase their yield or prevented market access (e.g. trading restrictions). Restrictions can be implemented on local, regional or national level. Further options are missing licenses, missing approvals by the competent authorities (e.g. for fertilizer, plant protection products, seeding materials) which prevented the EO to use these additionality measures in the past.

Verification guidelines:

- Can you demonstrate that local or national legislation is preventing the implementation of the yield increase measure (e.g. restrictions on agricultural practices), and market access, respectively, or can you demonstrate that missing licences or missing approvals by the competent authorities (e.g. for fertilizers, plant protection products, seeding material) restricted farmers to implement the yield increase measure?

(e) **Access to knowledge:** An EO may be able to prove that relevant knowledge was unavailable within a sector or region. It could also be possible that

knowledge is available in the region, but kept within boundaries of, for example, big companies (patents), or programs with restrictions to registry. The EO shall demonstrate how the knowledge on the additionality measure was acquired (e.g. documentation of training material, hiring of experts/ consultants, reports) and why this knowledge was not available before. The knowledge does not need to be "innovative" (see "first-of-a-kind"), but "new" to the EO.

Verification guidelines:

- Can you demonstrate how you acquired the relevant knowledge on the additionality measure (e.g. documentation of the training, hiring of experts/ consultants, reports) and why you did not had access to this knowledge before (e.g. limited access to training, lack of professional training)?
- Can you demonstrate that the low ILUC-risk certification enables the access to the knowledge?

{Guidance: this must be differentiated from "first-of-a-kind": the new knowledge does not have to be innovative (in general), but "new" to the economic operator}

(f) **First-of-a-kind measure**: An EO may be able to demonstrate that the additionality measure is a first-of-a-kind measure in the region or country, meaning that:

- The EO implements a technology (not applicable: knowledge, infrastructure, financing) ensuring higher productivity that is different from technologies that are implemented by other EOs, companies, farmers, projects, which are able to deliver the same output
- The technology is new and innovative for a short time and that the EO is one of the first adopters of this measure going beyond "business-as-usual" practices
- Its implementation started before the beginning of a commercial operation at another site in the same geographical area using the same technology and delivering the same output

Different technology means that the technology has the same output, but differ by at least one of the following:

- Input material(s)
- Machinery
- Production process (e.g. crop rotation, seeding material (e.g. own reproduction), agricultural management practice, mechanical plant protection)
- Water management/ Irrigation

- Soil management
- Harvesting process
- Etc.

The EO shall further demonstrate how he found out about this measure, e.g. via a publication or contact with other early adopters. The VS shall implement measures to limit the amount of EOs that can certify a measure claiming this option. As a general guideline, not more than 10% of farmers in a region can be claimed as "early adopters". Further, after the introduction of a new measure and the first low ILUC-risk certificate for this measure in the respective countries, the measure can solely be claimed as "innovative" for the following five years at maximum.

Verification guidelines:

- Can you demonstrate that the measure is new for a short time, that you are one of the first adopters of this measure and is this not "common" (business as usual) agricultural practice in the region or country?
- Can you demonstrate how you found out about this measure, e.g. via a scientific publication, or contact with other early adopters?

{Guidance: the measure must be innovative in the region/ country with limited adopters, yet}

(g) **Participating in an investment/development program:** An EO may be able to demonstrate that he is participating in a program linked to yield increase for EU biofuels production. The program shall be managed and funded by "independent" organisations like the World Bank or a charitable foundation without a specific interest in the promotion of certain feedstocks for biofuels production. Programs and foundations which have a link to relevant industry partners (e.g. mineral oil company) are not seen as independent. The participation in the program can be proven e.g. via contracts, received fundings or participation in relevant events and trainings.

Verification guidelines:

- Can you prove participation in the program e.g. via contracts with the project management, or via received fundings or participation in relevant events/ training?
- Is the program funded by an independent organization without any specific interest in the promotion of a certain feedstock for biofuels production and for the EU biofuels market?

{Guidance: E.g. the World Bank or a charitable foundation are "independent" organisations whereas e.g. programs and foundations funded by linked industries (e.g. growers associations, biofuels producers) are not seen as independent.}

Further, the EO shall provide evidence that the additionality measure was implemented to produce additional biomass for the EU biofuels market. This is also of relevance for "First-of-a-kind" measures. The following evidence may be used to prove this link, e.g.:

- If the EO has a contract with a biofuel producer or can prove that he produced feedstocks for biofuels production in the past
- If the EO overcame the non-financial barrier with the help of an EU biofuels company who e.g. provided financial support, knowledge
- If the EO used supporting material and/ or services from recognized voluntary certification schemes (e.g. information on low ILUC-risk certification, participating in trainings, events) initiating the process of implementing an additionality measure and starting the low ILUC-risk certification process
- If the EO was not certified in the past and is going for low ILUC-risk certification linked in time with the implementation of the additionality measure

3.4.3 Unused, abandoned or severely degraded land

For the purpose of producing additional biomass on unused or abandoned land, EOs shall provide evidence that for a consecutive period of at least 5 years before the start of cultivation of the feedstock used for the production of biofuels, bioliquids and biomass fuels, the delineated areas were used neither for the cultivation of food and feed crops or other energy crops nor for the cultivation of any substantial amount of fodder for grazing animals. Figure 2 gives an overview of the different sub-categories of land. For the production of additional biomass on abandoned and severely degraded land, farmers are exempted from proving additionality. In addition, small holders do not need to prove additionality.

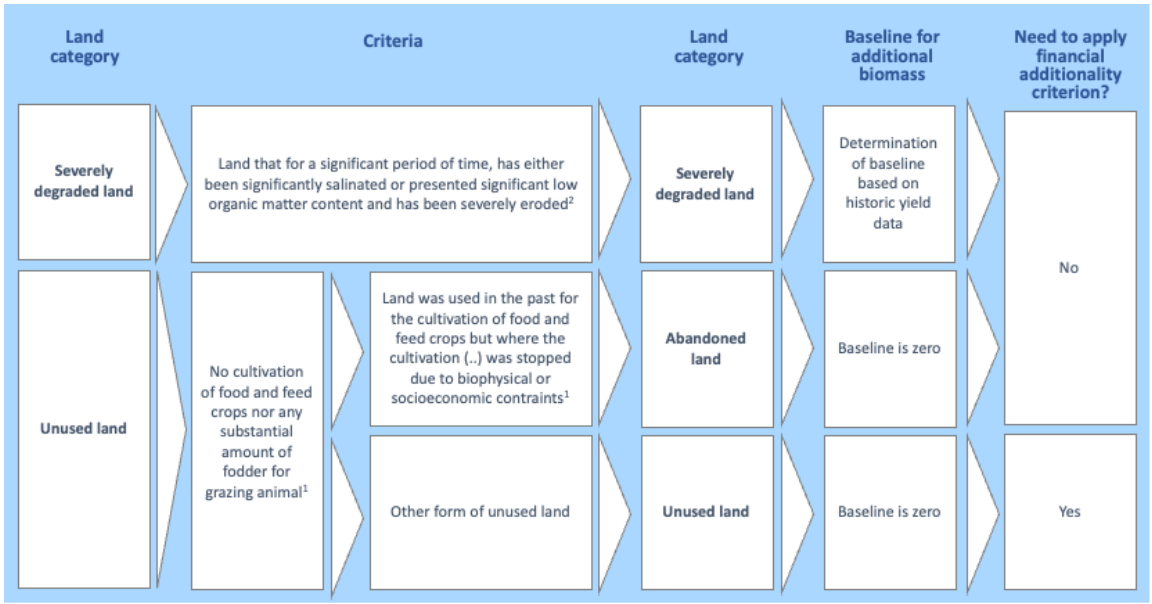


Figure 2.: Overview on unused land subcategories

For the production of additional biomass on abandoned and severely degraded land, farmers are exempted from the need to pass the financial attractiveness or barrier analysis "additionality" tests. In addition, small holders do not need to prove additionality. There is no need for any of the sub-categories of land to demonstrate that an additionality measure (i.e. yield increase measure) has been implemented to increase the crop yield, as the cultivation of a crop on one of these categories of land is considered to be the additionality measure. For unused and abandoned land, the yield baseline is considered to be zero. However, note that for severely degraded land that meets the thresholds in this certification guidance, if any biomass has been grown on the land in the past three years, a dynamic yield baseline must be determined following the methodology in section 3.5.1.[14]

Land which is classed as abandoned must have been used to produce food and feed crops in the past. Production on land which is unused, but not abandoned or severely degraded, needs to pass the financial attractiveness or barrier analysis test to be eligible for low ILUC-risk certification.

3.4.3.1 Abandoned land

Abandoned land means unused land, which was used in the past for the cultivation of food and feed crops but where the cultivation of food and feed crops was stopped

[14] Note that this approach to set a baseline for severely degraded land is different compared to Delegated Regulation 2019/807 and Implementing Regulation 2022/996 and is designed to adhere to the principle that only additional biomass production should be claimed as low ILUC-risk biomass (abandoned and unused land – by definition – has no existing yield

due to biophysical or socioeconomic constraints.[15] As soon as energy crop cultivation on the land starts, low ILUC-risk certification can be applied for a maximum of 10 years.

To demonstrate that land is abandoned, an economic operator must follow the decision tree in Figure 3. Documents on historic land use, remote sensing data, etc. can be used to prove historic and actual land status.

Abandoned land must meet the criteria for "unused" land and the specific definition of "abandoned" land. The steps required to demonstrate this are set out in the decision tree below. Table 2. below contains, for each of the five steps, a non-exclusive list of the types of evidence which might be used to demonstrate that they are met.

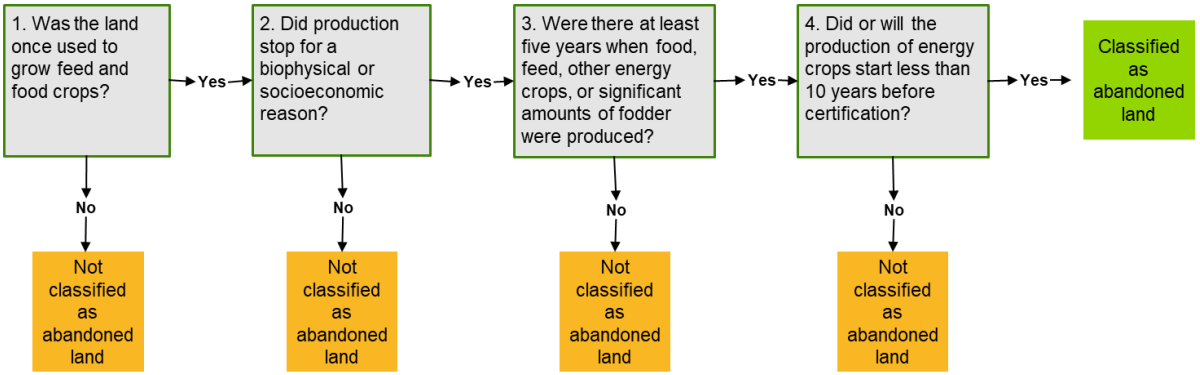


Figure 3.: Decision tree for abandoned land

Table 2.: Evidence to be supplied to demonstrate land is abandoned.

Step	What needs to be demonstrated	Evidence which could be used
1	Food and feed crops were once grown	Documents (farm records) in which crops of the types meeting the definition can be identified and where the information can be dated to at least five years before the end of the period required to meet step 3; Sales documents
2a	The land was abandoned – production of food or feed crop ceased	Evidence from farm records of a sustained fall in production; Satellite imagery showing a period of at least a year during which no signature characteristic of agricultural production was evident; Photographic evidence of abandonment such as dilapidated buildings, unused machinery or stores.
2b	Biophysical reasons for abandonment of land	Evidence from a published source of significant changes lasting more than two years in, e.g.: - Frequency of extreme weather events such as storms, droughts or flooding; - Timing of precipitation;

[15] Delegated Regulation 2019/807

		- Average temperature during the growing season; - Other factors such as pests and diseases which are reported by a qualified, independent agronomist to have had a significant adverse impact on farm performance. - Evidence from the previous farmer or local people without economic links to the EO.
2b	Socioeconomic reasons for abandonment of land	Evidence from either farm accounts or published statistical sources that prices obtainable for total output reduced, or prices of total inputs increased above-average (compared e.g. to the rate of inflation) over the three-year period preceding the 5-year period when food etc crops were not grown; Records of agricultural wages Evidence of reduced availability of labour, such as documentation of labour market opportunities arising elsewhere and evidence that these affected the availability of agricultural workers at the site Evidence that a key element of the supply chain, such as a road, riverboat service, market or downstream processor, failed or was otherwise unable to continue to serve the farm; Evidence that land was appropriated by the State or other public body.
3	That land was not used for food, feed, other energy crops or significant amounts of fodder for at least five years[16]	Satellite imagery showing a signature characteristic of no agricultural management for at least five consecutive years; Evidence that the land was in non-agricultural management for at least five years; Evidence that the land was used for other agricultural crops for at least five years
4	The production of energy feedstock started no later than 10 years before certification	Evidence from step 3
5	The crops being produced for certification allow for food and feed crops	Evidence such as seed packets, purchase or sales invoices, or agronomic reports which demonstrates that they are starch-rich crops, sugar crops or oil crops, or that the introduction of a biomass crop has supported the associated cultivation of starch-rich crops, sugar crops or oil crop for supply to food and feed markets.

[16] Step 3 can be used on its own to prove that land is unused without being abandoned. All production on unused land may be certified. The "additionality measure" which enables it to be brought back into use may take any form. This is in contrast to other land (i.e. that which has been used more recently for food production) where only additional production which results from agricultural improvements may be certified.

3.4.3.2 Severely degraded land

Severely degraded land is land which, for a significant period of time, has been either severely salinated or has been both significantly low in organic matter and severely eroded. All of these characteristics are matters of physical fact and must be readily established from a site inspection. The steps required to demonstrate that land is severely degraded are set out in the decision tree in Figure 4 below.

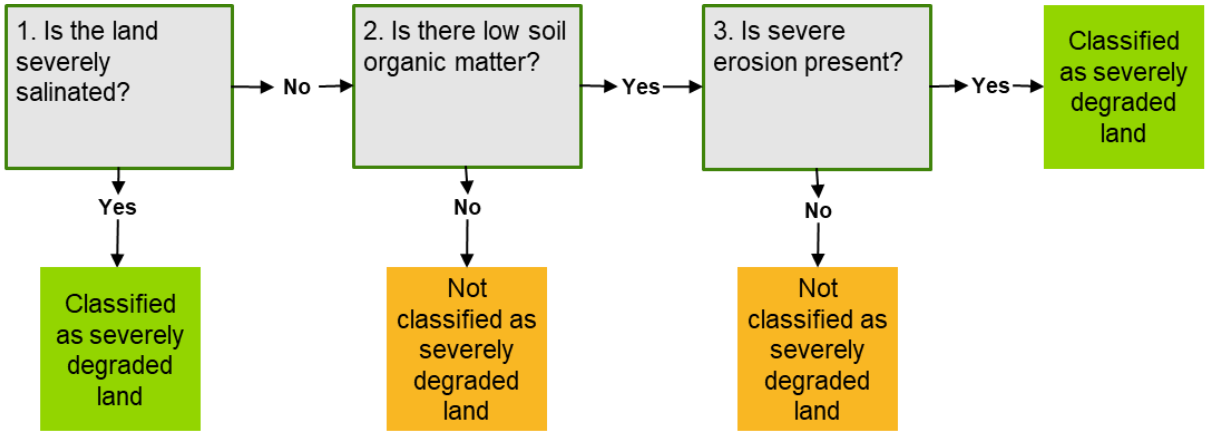


Figure 4.: Decision tree for severely degraded land

Severely salinated land

Many crops are sensitive to salts in the soil which will either result in lower yields or crops will not be able to grow at all. Depending on the level of salinization, crops show injuries, reduced growth and decreased productivity. Depending on crop-specific salt tolerance, with increasing salinization the number of crops which are able to grow and produce biomass, decreases.

To test soil salinity, an electrical conductivity test should be performed which measures the ability of the soil to conduct electricity. Water conducts electricity quite badly, so the conductivity goes up as the soil gets more salinated.

Land which is severely degraded due to low organic matter and erosion

For soil to be considered severely degraded within the meaning of the Delegated Regulation it must be both low in organic matter **and** be severely eroded. Low soil organic matter (SOM) damages the soil structure, frequently making it more vulnerable to erosion by wind or water. It should be noted that both the low organic matter and erosion criteria need to be met. Therefore a soil which has been severely eroded does not qualify as "severely degraded" if it has adequate or high organic matter. Similarly, soils with very low organic matter cannot be severely degraded unless they have also suffered from severe erosion. The SOM consists of soil organic carbon (SOC) and other components. The SOC can be measured and – based on a stable conversion factor – SOM can be determined.

Thresholds between 1% and 2% are commonly used to determine critically low levels of SOC (about 1.7% - 3.4% SOM).

Soil erosion is when sediment of soil particles gets displaces by wind, water or due to anthropogenic causes such as tillage or removal of vegetation cover. Severe erosion is generally considered to be more than 1.5 t/ha/yr soil loss. This can be proven through measurements (if available) or using erosion risk maps with appropriate thresholds and/ or photographic evidence.

Evidence to demonstrate "severely degraded land"

An application for the certification of feedstock based on the land qualifying as "severely degraded" must be accompanied by the results of appropriate soil tests conducted in line with the degradation thresholds set out:

- In the case of salinisation, the results of testing of the electroconductivity of the soil using the saturated paste method;
- In the case of low soil organic matter using the dry combustion method.

Table 3.: Thresholds for severely degraded land.

Criteria	Threshold	Guidelines for auditors
Significantly low soil organic matter content	<3.4% SOM	Commonly used values in literature are between 1-2% soil organic carbon, which is equivalent to 1.7-3.4% soil organic matter
Severely eroded	>1.5 t/ha/y soil loss, proven using measurements, maps or photographic evidence	Stopping erosion before it is irreversible
Significantly salinated	>4.0 dS/m	Cultivation hardly possible; yields decreased by 80%+ in comparison to regional average

Further guidance on soil sampling can be found in Appendix III (Soil sampling protocol). For soil sampling, several plots/ fields/ farms can be combined and a mixed sample can be analysed, in case these plots/ fields/ farms are in a defined area with the same soil characteristics, especially with respect to the relevant indicators soil organic matter, soil erosion and soil salinisation. The auditor shall verify, if the defined area fulfils this requirement. If this is the case, the area can be defined as one sample.

Determination of "additional biomass" for severely degraded land

For land that is classified as severely degraded and that has not been under cultivation for at least 3 years, the baseline is zero and all yields achieved count as low ILUC-risk.

Land that has had some previous yield needs to set a baseline, following the methodology in section 3.5.1.[17]

3.4.3.3 Other unused land

Unused land means areas which, for a consecutive period of at least 5 years before the start of cultivation of the feedstock used for the production of biofuels, bioliquids and biomass fuels, were neither used for the cultivation of food and feed crops, other energy crops nor any substantial amount of fodder for grazing animals. Substantial means that at maximum twice a year the produced biomass was harvested and/ or animals were grazing on the respective plot.

Steps 3 and 4 in the decision tree for abandoned land (Figure 3) may be followed to demonstrate that other land is unused. All production on such land may be certified (with the dynamic yield baseline set to zero) but evidence must first be supplied that the financial attractiveness and/or barrier analysis "additionality" tests described in section 3.4.2 are met. Unlike production on land which is not unused, however, it is not necessary for the economic operator to demonstrate that additional production results from an agricultural yield improvement measure ("additionality measure").

3.4.3.4 Soil sampling

Soil samples shall be taken in line with the soil sampling protocol in Annex III and the procedures set out in Annex V of the IR 2022/996. The soil samples should be processed in a lab that is accredited to the ISO 10694:1995 standard for soil organic carbon, which is the dry combustion (elementary analysis) method. This method is used in the LUCAS 2018 study by JRC[18] and required in the Implementing Regulation (EU) 2022/996[19] to measure soil organic matter. For soil organic carbon or soil organic matter measurement, an equivalent method, such as wet chemical oxidation (i.e. Walkley & Black), must be applied.

3.5 Calculation of additional biomass

Only additional biomass that has been produced after the low ILUC-risk certification has been granted shall be eligible for a low ILUC-risk declaration. The amount of additional biomass declared by the economic operator shall be subject to annual audits. In principle, the additional biomass produced can be determined based on the raw material harvested (e.g. fresh fruit bunches), or on the basis of the usable intermediate product (e.g. crude palm oil and palm kernel oil) processed at the

[17] Note that this approach to set a baseline for severely degraded land is different compared to Delegated Regulation 2019/807 and Implementing Regulation 2022/996 and is designed to adhere to the principle that only additional biomass production should be claimed as low ILUC-risk biomass (abandoned and unused land – by definition – has no existing yield)

[18] JRC (2018) LUCAS Soil Module: https://esdac.jrc.ec.europa.eu/public_path/shared_folder/dataset/75-LUCAS-SOIL-2018/JRC_Report_2018-LUCAS_Soil_Final.pdf

[19] Implementing Regulation (EU) 2022/996: https://eur-lex.europa.eu/eli/reg_impl/2022/996

certified First Gathering Point (the scope "processing unit" must also be covered), as long as the calculation of dynamic yield baseline and additional biomass uses consistent units over time.

The 'additional biomass' eligible for low ILUC-risk certification shall be the additional amount of feedstock produced in a clearly delineated area, compared to the dynamic yield baseline, as a direct result of applying an additionality measure.

In principle, the dynamic yield baseline is established based on historical yield from the delineated plot. The actual yield for the delineated plot after implementation of the additionality measure shall be compared against the dynamic yield baseline. The difference between the actual yield and the dynamic yield baseline is the additional feedstock eligible to be claimed as low ILUC-risk. An illustration of the approach (for an annual crop) is included in Figure 5.

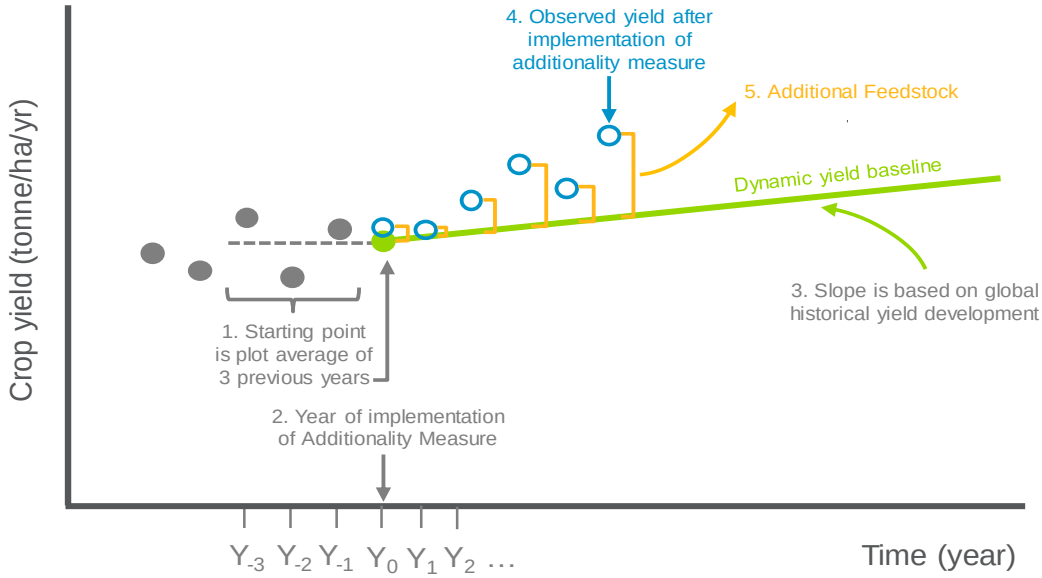


Figure 5.: Dynamic yield baseline for annual crops: main principles to determine the additional feedstock

3.5.1 Calculating the dynamic yield baseline

The dynamic yield baseline shall be set individually for each delineated plot, based on the crop type (annual or perennial) and the type of additionality measure applied (yield increase of main crop or new cultivation on unused, abandoned or severely degraded land). Plot-specific historical crop yield data from at least the three years preceding the application of an additionality measure shall be used to calculate the starting point of the dynamic yield baseline. For perennial crops, the dynamic yield baseline also takes into account the yield curve over the lifetime of the crop.

Worked examples for how to calculate the dynamic yield baseline and additional biomass are included in Appendix I.

3.5.1.1 Methodology to determine the dynamic yield baseline for annual crops

The dynamic yield baseline consists of two main elements: (1) a starting point and (2) a slope, see Figure 6. The observed yield for a delineated plot after implementation of the additionality measure will be compared against this baseline. The difference between the observed yield and the dynamic yield baseline is the additional biomass.

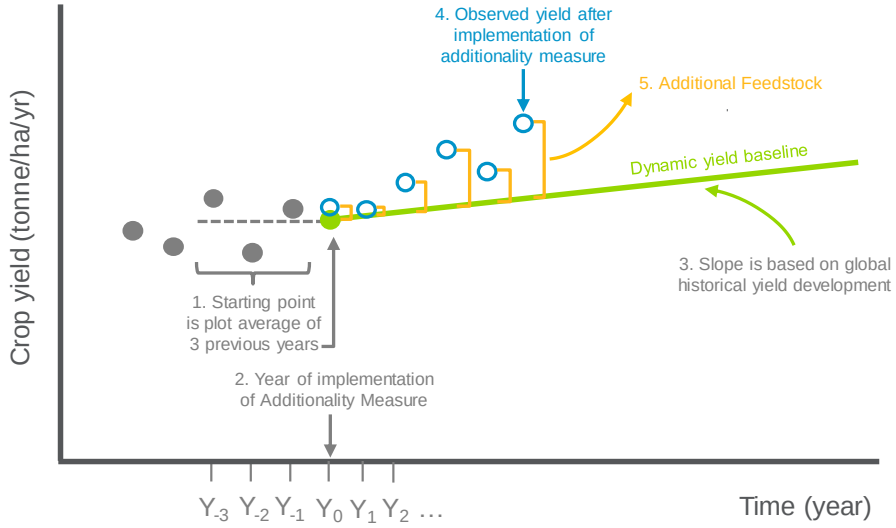


Figure 6.: Dynamic yield baseline for annual crops: main principles and determination of the additional feedstock

(1) Starting point

The starting point is calculated based on historic yield data from the economic operator or, in case operational, crop-specific data from the farm is not available, the best available data on crop yield for the respective plot(s)/ region. Note that an economic operator also needs to prove that they are taking an eligible additionality measure and justify how this will increase their yields. It is not allowed for a farmer with already above regional average yields to use regional data to set an artificially low dynamic yield baseline.

The dynamic yield baseline starts in year zero, 'Y0', the year in which the additionality measure is implemented. The starting point of the dynamic yield baseline in Y0 is calculated as the average of the historical annual crop yields of the target crop, on the same delineated plot over the three most recent years preceding the implementation of the additionality measure (Y-1, Y-2, Y-3).

If a farm rotates crops between fields and the crop whose yield will be increased ('target crop') has been planted in different fields on the same farm in previous years (i.e. typical crop rotation practice for annual crops), two options are envisaged for gathering the historical yield data to calculate the dynamic yield baseline:

- Option 1: The economic operator calculates an average of the yields for the three most recent years that the target crop was grown on the specific delineated plot prior to implementation of the additionality measure. As crops are grown in rotation, this may mean using older data.
- Option 2: The economic operator calculates a weighted average of the yields of the three most recent years that the target crop was grown on the farm prior to implementation of the additionality measure, even if those yields were obtained from different fields of different sizes on the same farm.

If historical data for the three most recent years of crop yields is not available, whether inaccessible or not representative as per the auditor's judgement, or if crop yield data is of insufficient quality, additional data may be obtained for earlier years or data from a neighbouring field growing the same crop under the same management plan. If one of the three years of historical data represents an exceptionally good or bad harvest (for example, discrepancy of 20% or more compared to the other reference years), the outlier crop yield shall not be included in the calculation to avoid skewing the three-year average and shall be replaced with appropriate historic or actual data from comparable set-ups/ plots/ regions, etc.

In case no historical data is available, the best available data shall be used to determine the starting point. This can be statistical data (local, regional or country-wide) data, information from experts, neighbours or local farmers as well as data published in peer-reviewed papers. The auditor is responsible for assessing the best data available and for determining a yield outlier, based on their expert judgement, experience on the ground and knowledge of the economic operator's practices over the long term. The auditor is also obliged to evaluate whether the crop yield data is of insufficient quality to be included as part of the baseline and annual audits, and to then decide whether a crop yield needs to be excluded or not.

(2) Slope

A slope shall be applied to the starting point to reflect the historical yield developments of the target crop. The slope is based on global data, taking into account that yields from the same crop differentiated in different regions of the world, depending on different biotic and abiotic factors.

For the most common biofuel feedstock crops, the slope to be applied is given in Table 4.[20] These values have been obtained by fitting a trendline over the last 20 years of global crop data obtained from FAOSTAT World+ yield data.

The economic operator shall use the relevant value from the certification guidance available at the start of their certification period, and that value shall be valid for the ten year dynamic yield baseline validity period.

[20] Note that the slope values are updated compared to Annex VIII of Implementing Regulation 2022/996, to reflect the most up to date FAOSTAT+ data available at the time of writing (FAOSTAT data years 2002-2021). It is anticipated that these values will be periodically updated by the European Commission.

Table 4.: Slope of the trendline for the most relevant crops based on FAOSTAT+ data

Crop	Barley	Maize	Oil palm fruit	Rapeseed	Soybeans	Sugar beet	Sugar cane	Sunflower seed	Wheat
Slope-20 (t/ha/yr)	0.03	0.08	0.13	0.02	0.03	1.05	0.25	0.05	0.05

Source: FAOSTAT World+ yield data 2002 - 2021

For any crop in the table, the dynamic yield baseline is determined by taking the starting point (three-year average of historical yields prior to application of the additionality measure) and adding the global trendline (slope) from Table 4 for each year of the baseline. The slope is in tonnes per hectare per year. Therefore, the following formula shall be used, starting at Y_0.

$$DYBx = (starting\ point\ DYB) + (slope_{20})x$$

Where:

DYB_x = dynamic yield baseline in year x after implementation of the additionality measure

x = year(s) after implementation of additionality measure

For certification of measures taken in the past, the economic operator can use the relevant slope value from the certification guidance available at the start of the certification period (to avoid economic operators having to calculate their own trendline based on FAOSTAT World+ data from the 20 years prior to the implementation of their additionality measure).

If the additionality measure is to replace the existing crop with a different (higher yielding) crop on a delineated plot, the counterfactual situation is the cultivation of the existing crop. The dynamic yield baseline shall therefore be determined based on historical yield and trend line data for the existing crop. The starting point of the baseline shall be the 3-year average of the crop yield obtained for the lower performing existing crop. The trendline is based on the global FAOSTAT trend line data for the existing crop. This approach shall only be used if it can be demonstrated that the better performing crop could be introduced due to changes in the biofuel market, as demonstrated in the additionality assessment.

3.5.1.2 Methodology to determine the dynamic yield baseline for perennial crops

In contrast to annual crops, perennial crops are not replanted every year. Crop yields obtained for perennial crops follow a curve over their lifetime. This curve is characterised by its distinctive pattern and absolute yields. The absolute yield depends on the crop cultivars and external factors such as soil and seed quality together with the environment. The pattern of the yield over the lifetime of perennial crops is taken into account when setting the dynamic yield baseline. This will allow

to calculate an appropriate volume of additional biomass, for example for oil palm, both in lower yielding immature years and higher yielding mature years over the lifetime of the palm tree.

Depending on the yield variation observed over the lifetime of different types of perennial crop, different methodological approaches shall be possible for different types of perennial crop.

In principle, some types of additionality measure for perennial crops may be applied at a certain age of the trees or may involve re-planting of the crop at the end of its lifespan. For economic operators whose plantation(s) consist of numerous plots with crops of different ages, this in effect results in annual (re-)certification and initial audits to verify on the one hand the additionality measures that have already been implemented before and, at the same time, to verify plots that are just starting with the measure.

Oil palm

For oil palm trees, the following data may be used by economic operators of oil palm plantations when determining their dynamic yield baseline:

- the historical crop yields obtained prior to implementation of an additionality measure;
- the planting year of palm trees on the delineated plot of land and/or their age profile;
- the cultivars of palm trees on the delineated plot, if applicable;
- the area of land replanted each year on a plantation, if applicable.

That data is combined with a growth curve to determine the dynamic yield baseline.

The key characteristic from the growth curve shall be the pattern, not the magnitude of the yield. The growth curve gives the pattern of the baseline curve. This needs to be combined with the historical yield data and age of the trees to adjust the magnitude of the dynamic yield baseline curve to the specific plot.

The following three options are available for determining the dynamic yield baseline for oil palm.

For each option, the data required to set the dynamic yield baselines must include:

Option 1 Standard growth curve:

- Age of trees on the delineated plot / planting year;
- Three most recent years of historical crop yields for palm grown on the delineated plot.

Option 2: Economic operator provides growth curve[21]:

- Age of trees on the delineated plot / planting year;
- Three most recent years of historical crop yield for palm grown on the delineated plot;
- The cultivars of palm trees on the delineated plot;
- Economic operator's own reference growth curve (shape).

Option 3: Group certification or mill level approach

- For the three most recent years, the total hectares and total yield in fresh fruit bunches (FFB) or the total quantity of oil (crude palm oil plus palm kernel oil) for palm trees grown on the delineated plot/plantation(s), producing palm as part of the group.

Options 1 and 2 apply where an additionality measure is taken on a stand of trees that are the same age, or if the age profile of the trees on the delineated plot(s) is known and this mix of ages of trees is asymmetrical.

Option 3 may be applied when the ages of the trees on the delineated plots are mixed and the age profile of the trees remains relatively symmetrical year after year. That is to say, if a consistent percentage of a plantation area or group, in the case of group certification, is replanted each year, resulting in a constant age profile for the trees over time.

Option 1: Standard growth curve

The first option uses the shape of a pre-established "standard" growth curve (based on existing scientific evidence) to determine the dynamic yield baseline for a delineated plot. The standard curve has been normalised and is shown in Figure 7 and Table 5 below.

The dynamic yield baseline is determined by using the 3 most recent years of historical crop yield data for the specific plot and the age of the palm trees when that yield was observed, and using the annual percentage yield change from the standard curve to form a "business-as-usual" yield curve relevant to the specific plot. One baseline can be calculated for a whole plantation or separate baselines can be calculated at (sub-)plot level.

[21] Most economic operators are expected to use the standard growth curve. To use the second option whereby the economic operator provides their own (shape of the) growth curve, economic operators have to show that the correlation between the standard growth curve and their baseline growth curve is less than 0.8. Note that even when the economic operator provides their own growth curve shape, the magnitude of the dynamic yield baseline still has to be adjusted in line with the historic yield data from the plot being certified.

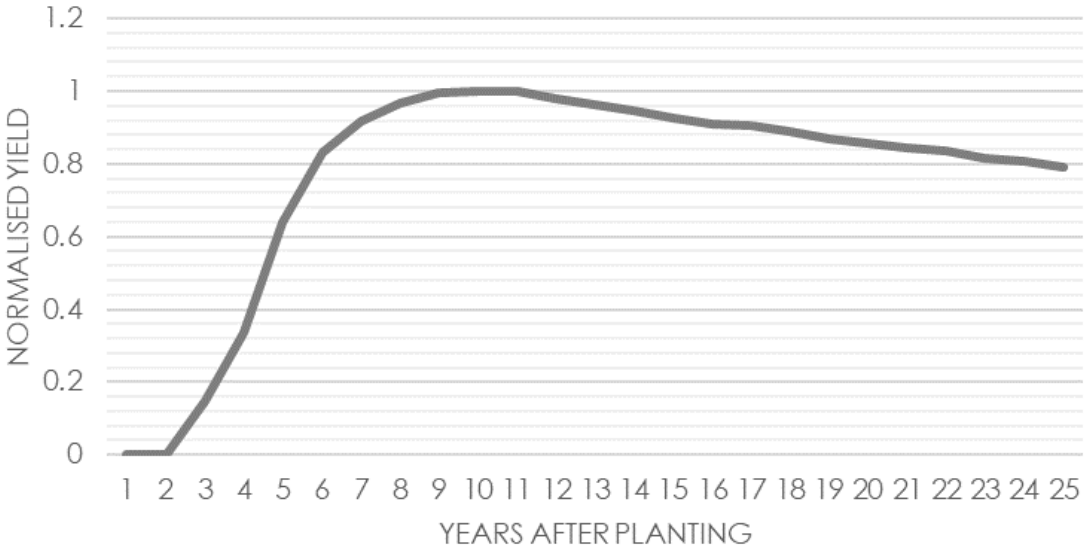


Figure 7.: Normalised standard growth curve palm yield data[22]

Table 5.: Normalised standard growth curve palm yield data

Years planting	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Normalised yield	0	0	0.147	0.336	0.641	0.833	0.916	0.968	0.996	1	0.999	0.980	0.965
Years planting	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26 +**
Normalised yield	0.945	0.926	0.910	0.906	0.888	0.870	0.858	0.842	0.836	0.815	0.806	0.793	0.793

* After 25 years, the yield would be expected to continue to decline. However, as the typical lifetime of an oil palm tree is around 25 years, there is a lack of data to support the magnitude of the decline after 25 years. Therefore, a conservative approach is taken to assume that the yield curve would remain at the 25-year level.

Table 6.: Annual percentage change in yield derived from standard growth curve

Years after planting	**1 to 3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Annual percentage change	-	128.0%	90.6%	30.0%	10.0%	5.6%	2.9%	0.4%	-0.1%	-1.9%	-1.6%	-2.0%
Years after planting	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26 +**
Annual percentage change	-2.1%	-1.7%	-0.5%	-1.9%	-2.0%	-1.4%	-1.8%	-0.8%	-2.5%	-1.1%	-1.6%	0%

* After 25 years, the yield would be expected to continue to decline. However, as the typical lifetime of an oil palm tree is around 25 years, there is a lack of data to support the magnitude of the decline after 25 years. Therefore, a conservative approach is taken to assume that the yield curve would remain at the 25-year level.

[22] As included in Annex VIII of Implementing Regulation 2022/996

Option 1 involves the following methodological steps:

1. To determine the average historical crop yield, collect the three most recent historical crop yields observed on the delineated plot prior to implementation of the additionality measure, as well as the corresponding age of the trees when those yields were observed;
2. Calculate an average (mean) of the three historical crop yields;
3. Based on the age of the trees when the historical yield data is from, determine where this average historical crop yield shall be on the standard growth curve (e.g. if the yield data is from trees aged 7, 8 and 9 years, the average historical yield should be considered to be in year 8);
4. To determine the next point of the dynamic yield baseline, multiply the average historical crop yield from step 2 by the corresponding calculated annual percentage change (or appropriate factor from the normalised standard yield curve) derived from the standard growth curve (Table 6 above). Repeat this for each subsequent point to plot the dynamic yield baseline;
5. Adjust the whole yield baseline by adding the compound annual growth rate (CAGR) to each individual data point, see Table 7.

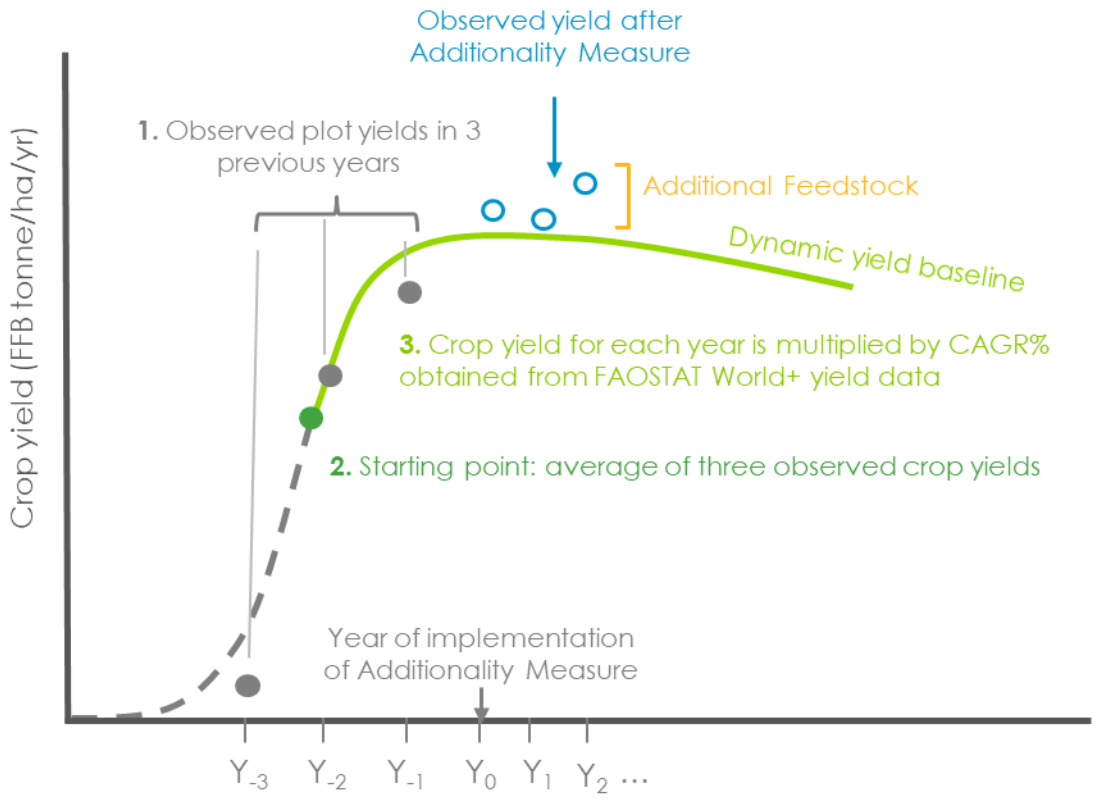


Figure 8.: Determination of the dynamic yield baseline for palm oil

The dynamic yield baseline shall be set for ten years from when the additionality measure is taken. If the oil palm trees reach 25 years old during that period, the baseline remains flat from that point. In case replanting takes place during the ten-year period, the economic operator can recalculate the baseline – **based on the same original historical yield data** – so that they are comparing their actual yield to the appropriate (new) age of the trees.

The calculation of the dynamic yield baseline should be based on the management system in place for the plantation and should work with the best available data for the plantation. In case economic operators implement an additionality measure in different years on different parts of the plantation, or in case the economic operator has a plantation with different ages of trees, **an individual baseline per plot may need to be determined**. This may mean that for plantations with plots of different ages, the harvest per plot may need to be documented. Because of the nature of the palm yield curve with naturally very low yields in the immature years, in general, it will not be possible to do the calculations based on average yields from (sub-)plots of different ages.

Compound annual growth rate (CAGR)

The final step in setting the dynamic yield baseline for palm, is to incorporate the global yield trend. This is done by applying the compound annual growth rate (CAGR) to each point of the yield baseline. The CAGR is calculated from FAOSTAT World+ yield data based on the average yield increase see Table 7 below.

Table 7.: Compound annual growth rate palm (20-year period)

Annual performance increase palm – business as usual	1.07%

Source: FAOSTAT World+ yield data 2002 - 2021

Therefore:

$$Palm\ DYB = Age\ adjusted\ yield * (1 + CAGR)$$

Option 2: Economic operator provides the growth curve

This option may be used in exceptional cases, if the economic operator can demonstrate that option 1 is not appropriate for their specific case. In such a case, if the economic operator has an expected growth curve determined based on the available data of palm seedlings (that relates to their 'business-as-usual' scenario), that curve may be used as the basis for the dynamic yield baseline instead of using the standard growth curve. All steps described in Option 1 shall be followed, replacing the standard growth curve with the economic operator's own curve. The economic operator shall therefore calculate the annual percentage change.

Option 3: Group certification approach

Option 3 may be applied when the ages of the trees on the delineated plots are mixed and the age profile of the trees remains relatively symmetrical year after year. For example, this could be the case if a consistent percentage of a plantation area

(or group, in the case of group certification) is replanted each year, resulting in a constant age profile for the trees over time over the whole certified area.

This approach may be used if a group manager, first gathering point or mill is seeking to certify a group that is taking the same additionality measure, and when the plantation or area supplying the mill contains a mix of ages of trees meaning that the annual yield supplying the mill has remained relatively constant.

To determine the dynamic yield baseline, the group manager needs to record the total plantation area (ha) supplying the mill and the total yield (fresh fruit bunches) that corresponds to that area in each of the last three years. This is used to determine the yearly yield per hectare for each of the last three years (in tonnes/ha). These data points are then averaged and used as the starting point for the dynamic yield baseline. In this case, because a straight line baseline is being set (rather than one that follows the yield curve of a specific age of tree), the annual oil palm yield increase increment from Table 4 can be applied to the starting point to determine the dynamic yield baseline.

Alternatively, the dynamic yield baseline can be calculated on a total basis (CPO plus PKO) at the mill, if the same plantation age conditions apply and the necessary data is available.

Sugarcane

Sugarcane is technically a perennial crop. However, the crop yield of sugarcane tends to average out over the harvesting season between replanted and ratoon crops on one plantation. The crop yield from a plantation would therefore be expected to remain relatively constant year-on-year (in the absence of specific measures to increase yield).

Therefore sugarcane can be treated as an annual crop when setting a dynamic yield baseline (see section 3.5.1.1).

The economic operator should be able to document a constant year-on-year yield obtained over the delineated plot of land prior to the implementation of the additionality measure.

Other perennial crops

For other types of perennial crop, the voluntary scheme will need to determine a standard growth curve that is applicable to that crop. The curve shall be calculated based on publicly available literature and peer-reviewed data (e.g. peer-reviewed papers, official statistics) on the growth pattern of the crop.

3.5.2 Calculating Additional Biomass

After implementation of the additionality measure, the economic operator shall determine the volume of low ILUC-risk biomass that can be claimed by **comparing the actual crop yield achieved on the delineated plot with the dynamic yield baseline**. The auditor must verify in the annual audit that the volume of additional biomass achieved is in line with the projections in the management plan, and seek justification if there are discrepancies of more than 20% compared to the estimates in the management plan.

If certification is sought for an additionality measure applied in the past, the additional biomass yield may be calculated and recorded in the management plan. While this allows the actual volume of low ILUC-risk biomass to be precisely calculated, **low ILUC-risk biomass may only be claimed after low ILUC-risk certification has been awarded**. Retrospective claims cannot be made for biomass supplied in the past.

To calculate the additional volume, the economic operator must record the crop yield from the delineated plot for each year, from the start of the implementation of the additionality measure. The economic operator needs to prove the link between the specific delineated plot and the crop yield achieved.

If the harvested volume is only measured (weighed) at a first gathering point, where products from multiple farms or plots arrive, then the documentation from the first gathering point can be used as proof of the harvested volume (yield) for the farms and plots involved. A record of the business transaction between the economic operator and the first gathering point can be used as evidence, as long as the link back to the specific delineated plot can be proven. In this case, the first gathering point is responsible for collecting and recording the crop yield data. It shall record yields of biomass collected per farm (and if necessary, for a specific delineated plot on a farm) based on a template to be issued by the voluntary scheme.

In the case of group auditing, it could be that the first gathering point acts as the group lead and is responsible for recording yield data for all delineated plots (see section 6).

To calculate the additional biomass volume, the crop yield data obtained for a given year shall be compared to the dynamic yield baseline. The additional biomass yield is equal to the difference between the observed yield and the yield projected by the dynamic yield baseline for the same year, multiplied by the surface area A (ha) of the delineated plot. This additional volume can be claimed as low ILUC-risk biomass.

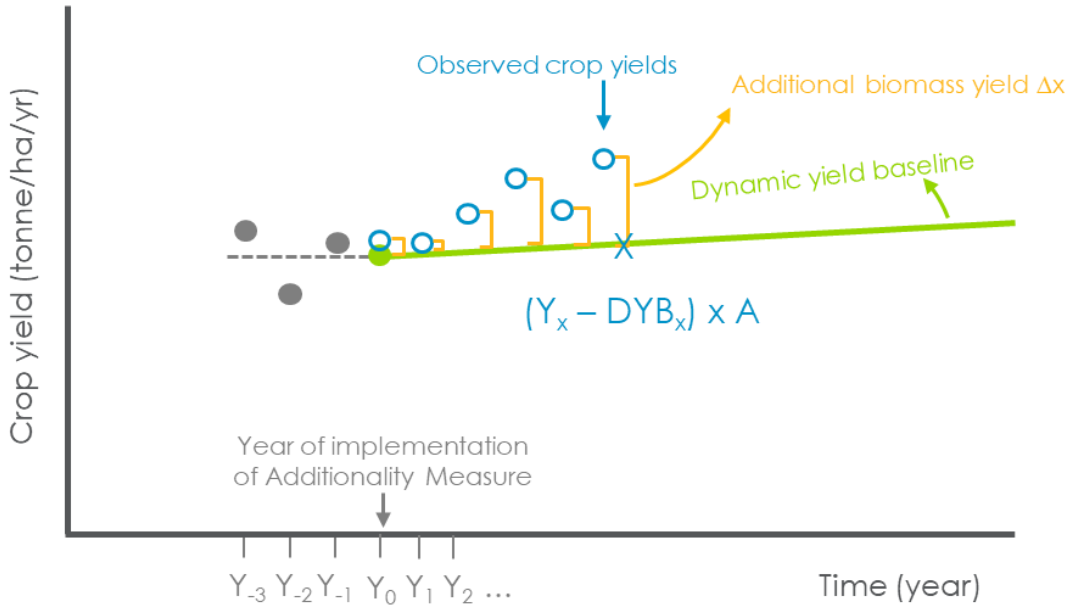


Figure 9.: Calculation of additional biomass

The following formula shall be used:

$$\text{Additional biomass} = (Y_x - DYB_x) \times A$$

Where:

Y_x = Observed yield in year x (in tonne/ha/yr)

DYB_x = Dynamic yield baseline in year x (in tonne/ha/yr)

A = Surface area of delineated plot (ha)

3.6 Requirements for Traceability

According to the Directive (EU) 2018/2001, economic operators along the physical supply chain have to demonstrate that the sustainability criteria of the RED II have been fulfilled. The sustainability criteria relevant under the RED II include the description of the raw materials and the country of origin of the raw materials, material related greenhouse gas (GHG) emissions, and evidence that the land related sustainability criteria of the RED II for the production of the raw materials have been fulfilled. For the scope of low ILUC-risk certification, these requirements still remain valid. The same holds true for the information that needs to be transferred throughout the entire supply chain, i.e. in the form of sustainability declarations. All relevant information must be traceable through a mass balance system in accordance with the provisions laid out in Article 30(1) of Directive (EU) 2018/2001.

In addition to the criteria for traceability set out in the RED II, the following information must be included on the respective delivery documents (e.g. sustainability declarations) by the first gathering point for low ILUC-risk certified material:

- The type of crop relevant for low ILUC-risk certification
- The type of additionality measure applied
- The amount of low ILUC-risk certified material supplied

4 Audit Preparation and Conduct

This chapter aims to provide an overview of the relevant aspects to conduct a low ILUC-risk certification audit. Economic operators must follow the rules set out by the respective voluntary scheme. This chapter solely focusses on aspects that are specifically relevant for low ILUC-risk certification. This includes requirements for Certification Bodies (CBs) and their auditors, as well as how to conduct the audit itself (e.g. on audit checklists, gathering of information on the audit site prior to onsite visits, preparation for interviews, etc.), as well as guidance for audit planning (time, duration, location, etc.), audit execution and audit documentation (template for the audit report).

4.1 Requirements for Auditors

CBs are responsible for establishing the framework for the audits performed by the auditors working for the CB.

For the purpose of certifying low ILUC-risk feedstocks and the respective biofuels, certification bodies and auditors must be able to verify economic operators in a way to confirm that reliable information is submitted by the economic operator to substantiate the claims of low ILUC-risk compliant material. Further, the audit process must be conducted in a way that is independent and transparent, reflecting the need for public scrutiny of the auditing approach.

Proof must be available, that the audits have been conducted, and the information submitted by economic operators must be verified to be accurate, reliable and protected against fraud.

Auditors must be independent of the activity being audited, free of conflict of interest, and competent. To ensure independence and to avoid conflicts of interest, third party audits are required for the certification of low ILUC-risk feedstocks. Auditors must have the appropriate skills necessary to conduct the audit, and CBs must have the appropriate general skills necessary to perform audits. This includes knowledge and professional experience in the following fields:

- Land use characteristics and land categories
- Investments in agriculture, concerned with yield productivity, sustainability, and biodiversity
- Agricultural and trade policies on national, regional, and global levels
- Biofuel production and biofuel refining value chains

In general, knowledge regarding land use criteria and no-go areas, experience in agriculture, ecology or similar, chain of custody systems, traceability, mass balance systems, data handling or similar, and greenhouse gas calculation and verification are also crucial elements for qualification.

More specifically, the auditor must have expertise in the assessment of additionality measures and the verification of the land categories relevant for low ILUC-risk certification, i.e. unused land, and therefore, abandoned land or severely

degraded land respectively. Further, the auditor must be capable of assessing the additionality measures applied in the context of yield increases on the farm/ plantation. During the audit of the first gathering point, the auditor must have the respective competencies to verify the compliance with financial attractiveness or non-financial barrier analysis in accordance with the Delegated Regulation (EU) 2019/807.

Audits to verify compliance with the low ILUC-risk requirements must be conducted at least every 12 months.

Auditors are not permitted to carry out any activities which may affect their independence or impartiality, and specifically must not carry out consultancy activities for the economic operator whom they audit for compliance with low ILUC-risk requirements.

4.2 Risk Assessment and Management

During the certification audit, the auditor must carry out risk evaluation or risk assessment at the farm/ plantation or the first gathering point to be audited. The result of the risk evaluation drives the intensity of the audit and influences the size of the sample. At least a "limited assurance level" should be established during the audit, in context with the nature and complexity of the auditee's activities. A "limited assurance level" implies a reduction in risk to an acceptable level as the basis for a negative form of expression by the auditor.[23]

(1) Risk identification

The first step during the risk assessment is to identify potential risks by analysing the risk indicators listed in the figure below. A risk assessment may be conducted partially via a desk assessment, e.g. by verifying land status (abandoned land, severely degraded land, unused land), implementation of additionality measure, 'effectiveness' of the measure). However, a desk assessment requires a verification of the results at the specific location (so-called "ground-truthing"). The risk indicators identified for low ILUC-risk feedstocks form the basis for the risk assessment in the framework of a low ILUC-risk certification. They shall be considered during all pilot audits in order to identify potential risks of non-conformity with the low ILUC-risk requirements or for the integrity of the voluntary scheme.

For the verification of farms, a risk assessment must be conducted to determine the risk of non-conformity with the RED sustainability requirements (see chapter 3.2) This means, it must be assessed if a farm is located within the proximity of areas where the cultivation of biomass is prohibited according to Directive (EU) 2018/2001, Article 29.

Additionally, the risk of non-conformity with the requirements specifically important for low ILUC-risk materials in accordance with Delegated Regulation (EU) 2019/807 must be assessed.

[23] According to ISAE 3000.

The risk of non-conformity of farms should be assessed with appropriate and reliable databases or remote sensing tools allowing for a meaningful and well-balanced result for the respective region. If available, such a risk assessment should be performed with tools or systems which may be recognized by the European Commission in the framework of the RED II (so-called non-typical voluntary schemes).

A non-exhaustive overview on significant risk indicators for low ILUC-risk certification is provided in Table 8 below.

Table 8.: Non-exhaustive list of risk indicators for low ILUC-risk certification

General Risk Indicators	Risk Indicators for Farms and Plantations	Risk Indicators for First Gathering Points
• Determination, structuring, organisation and documentation of the number of workflows and their complexity (in-house processes) • In-house quality management system, internal audits (structure and documentation) • Risk of corruption and fraud (e.g. according to OECD list, Transparency International Corruption Perceptions Index, etc.) – i.e. how serious is the external risk of corruption and how does this influence the implementation • Certification history, including previous or current low ILUC-risk certification as well as certification under other sustainability certification systems, especially those recognized by the European Commission within the framework of the RED II • Frequency of changes in certification system (so-called "scheme hopping")	• Proximity to and/or overlap with no-go areas (forest land, peatland, wetlands, highly biodiverse grassland, etc.) • Land conversion shortly before or after January 1st 2008 • Factors influencing significantly the output per acreage and the output per ha. • Factors influencing the application of additionality measures • Factors related to the definition of unused, abandoned and/or severely degraded land	• Factors influencing the calculation of financial attractiveness of the applied additionality measures

General Risk Indicators	Risk Indicators for Farms and Plantations	Risk Indicators for First Gathering Points
• Accuracy of records and documents • Degree of topicality, updating frequency of records and documents • Accessibility of records and documents • Completeness of records and documents • Risk of single consignments (batches) being claimed more than once (so-called "double-accounting")		

(2) Risk evaluation

The second step of the risk assessment is to evaluate and classify the identified risk. For the evaluation of the identified risk, the following elements must be taken into consideration:

- Sources and reasons of the risk
- Identification of potential consequences from the risk if it would occur, the impact (e.g. negligible, moderate, critical) and the probability of its occurrence (e.g. unlikely, occasional, likely)
- Factors influencing the consequences and the probability of the risk to occur
- Differing importance or emphasis of the risk by different stakeholders

Based on the risk evaluation, the risk is classified according to one of the three risk levels:

- Regular (risk factor 1,0)
- Medium (risk factor 1,5)
- High (risk factor 2,0)

With respect to the evaluation of the risk on farm level, the principles and requirements specified in 3.2 and 3.3 must be considered. Relevant risks on farm level include:

- Biomass production on land with high biodiversity value, high carbon stock or with a high conservation value
- Application of additionality measures and their respective impact on yield increase

With respect to the risk of a flawed or deficient documentation the following guidance can be given for the risk evaluation and classification:

- If the necessary records and documents are kept accurately, up to date, complete, easily accessible and there is no indication of non-conformity with low ILUC-risk requirements and the risk can be classified as regular. The risk for non-conformity with traceability requirements can e.g. be considered to be regular, if appropriate track-and-trace databases are used and can be accessed by the CB during the audit.
- If the necessary records and documents are not kept accurately and are not easily accessible, the risk should be classified as medium.
- If the records and documents are not continuously up to date and not kept to full extent, i.e. files are missing, files are not accessible, files are not disclosed, or if there is indication for non-conformity or fraud the risk should be classified as high.

Specific indication of non-conformity with low ILUC-risk requirements must be taken into account appropriately during the risk evaluation and classification.

It is up to the CB's judgement to discontinue the audit if the risk is ranked high and if either the documentation is not easily accessible, or the amount of unavailable documentation does not allow for a professional audit. Depending on the actual findings during the audit, the CB is entitled to increase or reduce the risk level applied during the audit.

(3) Identification and implementation of risk control measures

After the risk is identified and evaluated it must be managed properly to ensure that the probability of non-conformity with low ILUC-risk requirements is continuously minimized. This is done by applying the following elements:

- Adjusting the intensity of audits to adequately take into account the risk. In case of group certification this means that the size of the sample may be adjusted. With regards to traceability, this means adjusting the number of documents to be verified by the CB.
- Carrying out announced or unannounced surveillance audits if necessary
- Adjusting the tasks of the management of an auditee, in particular with regards to:
    - Specification of responsibilities
    - Training of employees
- Documentation
- Internal auditing and management system
- Extending the definition of risk factors for certain areas

For sample audits of farms, the minimum sample size must be multiplied by the determined risk factor (1,0, 1,5 or 2,0). The risk factor therefore determines the number of locations which must be audited (see also chapter 5 on group certification). In case of non-conformity of individual group members, the determined sample size (s) of the current audit must be doubled.

For annual additionality audits of first gathering points, the risk factor drives the intensity of the audit with respect to documentation to be verified. The entire documentation relevant for low ILUC-risk certification for a complete year must be available during a low ILUC-risk audit in order to evaluate the mass balance calculation and allow for plausibility checks between company reporting and mass balance results. The CB is entitled and must be able to take random document samples to check whether records and documents meet the requirements for traceability (e.g. weighbridge tickets, delivery notes, low ILUC-risk declarations or proofs of low ILUC-risk quality). It is the CB's responsibility to define the size of the sample that will permit the CB to reach the level of confidence necessary to issue a certificate. Following guidelines can be applied:

- If the risk is classified as "regular" random document samples from three successive months are sufficient to assess whether the applicable low ILUC-risk requirements are met.
- If the risk is classified as "medium", random document samples from three successive months as well as all documents from one complete month should be checked.
- If the risk is classified as "high", the documents of three successive months should be checked completely.

4.3 Documentation

Economic operators must have a documentation and quality management system which can be audited by the CB.

System Users are responsible and obliged for preparing any information related to the auditing of such evidence and documentation. Such a system should normally include e.g. the following aspects[24]:

- a description of the relevant products,
- quality objectives and the organisational structure, responsibilities and powers of the management,
- corresponding manufacturing, quality control and quality assurance techniques, processes and systematic actions that will be used,
- quality records, such as inspection reports and test data, calibration data, qualification reports on the personnel concerned, etc.
- a management plan including all relevant information for low ILUC-risk certification in line with the requirements outlined in chapter 3.1.2

[24] Also see: Points 2 and 5.2 of Module D1 (Quality assurance of the production process) of Annex II of the Decision on a common framework for the marketing of products (Decision No 768/2008/EC).

4.4 On-site Audits

A low ILUC-risk audit to verify compliance of a System User is required at least every twelve months. Low ILUC-risk audits have to be conducted on-site at the location of the economic operator registered for low ILUC-risk certification. This includes the audit at the first gathering point or central office of farms, as well as sample-based on-site audits of farms (unless a farm is individually certified). However, for some requirements it is possible to prepare their verification already prior to the on-site audit with a desk-based approach. This is true for the identification of land use change in accordance with RED II requirements as well as for the identification of unused (including abandoned or severely degraded) land that is used for the additionality measures. For the (partly) desk-based verification of these requirements, the tools as described in this guidance document shall be used. Any desk-based verified requirements must still be confirmed during the on-site audit.

The time and duration of the audit depends on the number of samples to be audited as well as on the planning of both CB and economic operator. Time and duration must be documented properly in the audit checklists.

Each economic operator registered for low ILUC-risk certification must conduct an internal assessment (self-assessment) of compliance with the requirements prior to certification, including the calculation of the additional biomass and the additionality measure implemented prior to annual audit. The results of the internal assessment must be documented, reviewed and signed by the management of the economic operator to be certified. In the case an economic operator currently participates in or has recently participated in more than one voluntary certification system, the CB must always verify that multiple claiming (so called "double-accounting") of low ILUC-risk characteristics cannot and did not occur. For this verification, the CB is entitled and obliged to assess the relevant documentation (e.g. mass balance, auditing reports) of all relevant certification systems.

Audits should be conducted taking into account the principles specified in ISO 19011 (plan, do, check, act – see Figure 12), or a justified equivalent. The CB must establish at least a "limited assurance level" when conducting audits.

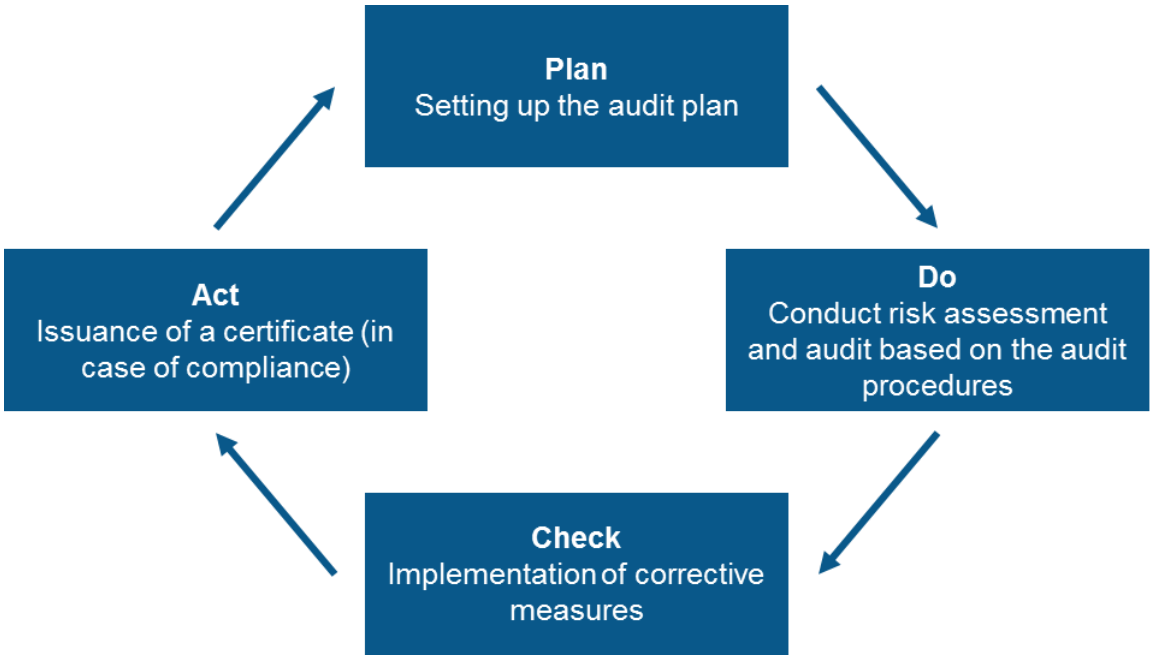


Figure 10.: Certification process based on the principles of ISO 19011

During the audit, the CB must identify the activities undertaken by the economic operator which are relevant for a low ILUC-risk certification. This includes the identification of relevant systems and the overall organisation especially with respect to the applicable low ILUC-risk requirements and the effective implementation of relevant control systems. During the audit the CB should draw up a verification plan which corresponds to the risk analysis and the scope and complexity of the economic operator's activities, and which defines the sampling methods to be used with respect to the economic operator's activities. The CB should carry out the verification plan by gathering evidence in accordance with the defined sampling methods, plus all relevant additional evidence, upon which the CB's verification decision will be based. It is the economic operator's obligation to provide any missing elements of audit trails, to explain variations, or revise claims or calculations, before the CB can reach a final verification decision (i.e. the decision to issue a certificate).

If compliance with the low ILUC-risk requirements has been verified during the audit, the CB can issue a low ILUC-risk certificate.

Interviews are a critical part of the audit. Interviews should be conducted with both, management and workers at the farm/ plantation and/or the first gathering point. Interview questions regarding low ILUC-risk certification should focus on the chosen additionality measure(s) and its effectiveness. The main challenge for auditor is to try to find out if the implemented additionality measure is the main driver for biomass increase.

The number of worker interviews of each farm/ plantation and first gathering point should be proportional to the number of workers hired. The accompanying person must not answer the questions that auditors ask to workers. In order to receive objective and uninfluenced information from interviewees, auditors may request

representatives of the management or employers of workers to not participate in the respective interview.

Auditors may judge that it is necessary to obtain information from other sources through interviews with other local stakeholders, e.g. community leaders or local NGOs to confirm or refute certain information.

4.5 Non-conformities

Voluntary schemes usually define critical, major and minor non-conformities and define the consequences for economic operators if such non-conformities are identified during an audit. The consequences should be in line with those in the main voluntary scheme standards.

In principle, anything set out in the Renewable Energy Directive 2018/2001/EU, the Delegated Regulation 2019/807 and the Implementing Regulation 2022/996 on verifying compliance with the sustainability criteria[25] would be mandatory requirements. Non-compliance with any mandatory requirement triggers a critical or major non-conformity.

The consequences of a **critical or major non-conformity** should be that the low ILUC-risk certificate is suspended, following the rules set out by the main voluntary scheme. Any consequences for the main certificate would depend on the nature of the non-conformity and would be determined by the voluntary scheme. A major non-conformity in the context of the low ILUC-risk certification could include not implementing the management plan and/or the additionality measure(s), or significant and structural (i.e. not correctable) errors in the volume of low ILUC-risk claims made.

If the main voluntary scheme certificate is suspended or withdrawn due to reasons unrelated to the low ILUC-risk criteria, then the low ILUC-risk certificate is also suspended or withdrawn, given that his is an add-on to the main scheme.

A **minor non-conformity** is usually defined as something that can be corrected. This might be something like a mistake in the calculation of additional biomass, or in the volume of low ILUC-risk biomass claims made.[26] If such a non-conformity is identified, the procedure set out in the main voluntary scheme should be followed. This would normally give the economic operator a defined number of days (e.g. 30-90 days) to correct the error, after which the auditor would check the correction and sign off on the audit.

Based on the audit findings, economic operators may not fulfil the requirements for low ILUC-risk certification and, thus, may lose the low ILUC-risk certificate, although still be eligible for the "normal" certificate.

[25] Renewable Energy Directive 2018/2001/EU, Article 30(8): https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN

[26] Unless the mistakes in claims are identified as being fraudulent, in which case if is unlikely that a correction would be permitted and the certificate would be suspended or withdrawn.

4.6 Low ILUC-risk certificates

The low ILUC-risk certificate will be published on the voluntary scheme's website. For transparency purposes it will need to include the following information:

- Contact details of main certified entity (company name and address, details of the designated point of contact);
- Scope of certification (type of additionality measure and additionality test applied as well as type of economic operator (if they are small holders));
- Longitude and latitude coordinates (for farms and plantations certified as single entities);
- List of sites under the scope of certification (name and address);
- Total volume of biomass certified as low ILUC-risk;
- Contact details of the certification body (name and address) and logo;
- Unique certificate number or code;
- Place and date of issuance;
- Certificate valid from/to dates (and date certified, if applicable);
- Stamp and/or signature of issuing party.

The low ILUC-risk procedures and the audit report must be submitted together with the certificate issued by the CB to the voluntary scheme and will be published on its website together with the certificate. In the event that the external audit showed that the audited economic operator did not meet the requirements of the low ILUC-risk certification, the audit procedures must be submitted to the voluntary scheme immediately after termination of the audit.

5 Group certification

Group certification is based on the concept that an extensive part of the inspections required is carried out by internal auditors. Independent external auditors assess and evaluate the effectiveness of the internal audit system, conduct audits of a sample of the group members (sampling) and certify the entire group. In several cases, an individual audit of each single producer of low ILUC-risk feedstock would impose disproportionate financial costs and effort on the entity and the general certification process. By joining a group, biomass producers can reduce the certification effort and costs considerably. This approach is of specific importance for the certification of smallholder farmers, producer organisations and cooperatives.

With respect to low ILUC-risk group certification of farms/ plantations the following requirements apply:

5.1 General requirements

Group auditing for low ILUC-risk certification should be permitted for a group of farms on which the same target crop is cultivated in the same geographical region using similar agricultural management practices. Relying on already established set-ups, low **ILUC-risk certification can be a sub-group within an existing group certification** under a certified First Gathering Point. In such a case, the requirements for group certification are already covered.

In case of a "new" group certification set-up and the establishing of a new group, the following conditions shall be met:

- The members are located in the same region (geographic proximity)
- The climate conditions for agricultural production are similar
- The farms are similar in size; large farms can be included in a group but should be treated differently with respect to external auditing
- Similar production systems are applied
- The risk assessment has shown a similar risk exposure for the group members

Group members which do not fulfil these conditions will be treated as autonomous enterprises. Nevertheless, for low ILUC-risk certification, each producer is allowed to apply the additionality measure of choice.

Group certification for farms and plantations is only acceptable when the areas concerned are near each other and have similar characteristics. Farms and plantations can become certified under the framework of a first gathering point. For low ILUC-risk certification, the group members wishing to be part of the low ILUC-risk sub-group must meet the low ILUC-risk criteria individually. The **dynamic yield baseline is established at the individual farm (group member) level** and **actions (additionality measures) leading to low ILUC-risk biomass should be taken at the individual farm level**, but both can be **coordinated at group level**. In principle, the **additionality requirements** (i.e. financial attractiveness test, barrier analysis or various exemptions) **must also be met at the individual group member level**, although there will be situations where the group members are in a similar situation

and are taking similar additionality measures, and thus the additionality proof could be coordinated at the group level (e.g. if all group members face a similar barrier or are taking the same first of a kind measure or are part of a similar eligible program, see section 3.4.2).

The group leader coordinates the activities, collects data for all management plans and annually calculates the additional (low ILUC-risk) biomass that can be claimed. The group leader (FGP) would also have responsibility for internal checking. Independent external auditing within the group then takes place annually on a sample basis.

5.2 Management requirements

A group of farms should always be represented by a head office, that is responsible for the group management. There should be qualified personnel responsible for managing the group, with a designated person in charge. The group must also have adequate finances to implement the internal management system to ensure compliance of individual group members. For the purpose of low ILUC-risk certification for farms and plantations (not small holders) this is a first gathering point. The head office is responsible for the implementation of the internal management system and for the compliance of each group member with the low ILUC-risk certification requirements. These responsibilities include:

- To set up a procedure to take in and register new group members
- To inform the group members about their responsibilities and about the relevant low ILUC-risk requirements applicable to the group
- To make sure that all group members have an adequate understanding of the requirements and processes
- To run an up-to-date register of members
- To plan and organise internal audits
- To issue annual internal audits
- To inform the members about relevant changes or adjustments to requirements
- To compile the necessary documentation
- To exclude members in the case of non-compliance (relevant for both internal and external audits)
- To initiate preventive and corrective measures in member operations
- To undertake a risk assessment for new members

The rights and duties concerning the group members shall be documented and defined in a regulating contract or agreement between the group members and the head office of the group.

Group members have the following responsibilities if they supply low ILUC-risk material:

- Commitment to the group's head office to meet the standard requirements and to report intentional or unintentional non-conformities
- Conducting a self-assessment (including calculating the dynamic yield baseline and (anticipated) actions taken for yield increase) and signing a self-declaration including also the management plan for ILUC-risk certification
- Providing necessary information to internal and external auditors, especially regarding the (major) production activities, applied low ILUC-risk additionality measures and sales or deliveries of low ILUC-risk material
- Granting access to the group members' premises to conduct internal and external audits
- Commitment to the implementation of amendments and corrective actions

5.3 Documentation Requirements

The following information must be documented for a low ILUC-risk certification of groups:

- List of all group members including name and address/ location, type of crop, the size of the production area and the volume of production
- Records of member training undertaken
- A register of the delineated plots belonging to registered farms (group members) where low ILUC-risk measures (additionality measures) are applied (see also self-declaration and ILUC management plan)
- Process instructions
- Contracts and/or agreements between the group's head office and the group members, containing at least:
    - a commitment by the group member to fulfil internal standards and certification requirements;
    - a commitment by the group member to provide the group management with required information;
    - acceptance by the group member of internal and external inspection;
    - an obligation for the group member to report intentional or unintentional non-conformities; and
    - the right of members to terminate membership.
- Records for (major) production activities and sales, deliveries and transportation of low ILUC-risk material
- Audit results of internal and external audits including non-conformities and corrective measures
- Review of the audit results by the group's head office

An appropriate instrument for the documentation of processes and contents is a (quality) management handbook. The group should have a uniform method for mapping. Maps may be replaced by GPS-based information to allow for a more detailed overview and to improve the risk assessment, e.g. by using satellite data, databases or remote sensing tools.

5.4 Internal Audits

The group must introduce an internal audit system which monitors the performance of the group management and controls compliance with sustainability and low ILUC-risk requirements before each annual audit. The internal audits should ensure the individual group members' compliance with the requirements for low ILUC-risk certification. The internal audit should cover the low ILUC-risk requirements that are relevant for the group as a whole and for the scope of the individual group member in particular. A plan must be developed containing at least:

- The auditors in charge
- The participants
- The timeframe
- Audit emphasis
- The procedure

Prior to a first certification, all individual group members and the group as a whole must be subject to an internal audit to verify compliance with sustainability and low ILUC requirements and the functionality of the internal audit system. Before a new member can be registered, they must first be internally audited.

The internal auditors in charge must be qualified to professionally judge the relevant questions. Before they start auditing, they should be trained regarding the requirements of the respective voluntary scheme and with regard to the low ILUC-risk add-on module. Training of the internal auditors should continue on a regular basis, especially with a focus on relevant risk factors identified for the group.

The internal auditor must document his/her activities and the results of the internal audits. The documentation must be made accessible to the external auditor.

The group must carry out an annual review. As a minimum requirement, this review must contain the evaluation of the audit results and of possible inputs from a third party.

5.5 External audits

External audits of the group must take place on a yearly basis (i.e. at least every 12 months). The group's head office is always audited. The sample size of group members to be audited must be calculated by the external auditor and is driven by the risk factor determined by the external auditor during the risk assessment. The external auditor is responsible for selecting and auditing individual group members within the scope of the sample.

The correct definition of the sample size (s) to be audited for compliance is the basis for a consistent and reliable group certification process. In order to determine the sample size, the total number of individual group members (n) relevant for sampling and the risk factor (r) determined during the risk assessment must be taken into account. The sample size is determined by the following formula:

$s = r \times \sqrt{n}$

s: sample size

r: risk factor

n: total number of group members.

The minimum sample size is the square root of the total number of group members ($\sqrt{n}$). The minimum sample size must be multiplied with the risk factor (r) determined by the external auditor during the risk assessment. For a regular risk, the minimum sample must be multiplied by 1.0. For medium risk the minimum sample must be multiplied by 1.5. For high risk the minimum sample must be multiplied by 2.0. The auditor is entitled to increase the sample size according to the individual situation and based on the auditor's risk assessment in order to reach the necessary level of confidence to make a reliable statement regarding the conformity of the group. The lowest possible sample size is one.

If the result of calculating the sample size (s) is a decimal number, the sample size (s) is to be rounded up to the next whole number (integer). The decisive factor for rounding up is the first position after the decimal point. This means, calculated sample sizes (s) up to 1.04 will result in a sample size of 1. A calculated sample size of 1.05 or higher would lead to a sample size of 2 (1.05 must be rounded up to 1.1 which must be rounded up to 2). This formula ensures a control density of the group, following in principle the control requirements set by the European Commission in the framework of the EU Cross Compliance system.

Farms and plantations which are participating in group certification must conduct a self-assessment and sign the respective self-declaration including the ILUC-risk management plan for compliance with the low ILUC-risk requirements and provide it to the group's head office (e.g. central office or first gathering point). Thus, the total number of group members (n) is composed of all farms and plantations which have conducted the self-assessment and signed the self-declaration and ILUC-risk management plan at any time during the 12-month period prior to the date of the certification audit. However, no claims can be made before the certification audit.

The external auditor conducting the low ILUC-risk group audit must select individual group members to be included in the sample for verification of compliance with the scheme requirements. The group members to be audited should be selected in a way that represents the whole group in a well-balanced manner. The selection should be based on a combination of risk-based selection and random selection. The auditor must consider at least the following factors when determining the sample:

- Type of supplied raw material (if applicable, these should be represented appropriately in the random sample)
- Types of additionality measures (if applicable, these should be represented appropriately in the random sample)
- Different sizes of suppliers
- Geographical location, e.g. by clustering the relevant area into different risk areas
- Indication of non-conformity or fraud.

At least 25% of the selected group members should be determined per random process. For the risk-based selection, an auditor should preferentially select group members for the sample where there is indication of non-conformity, or fraud, or group members that are located in high-risk areas (this is especially relevant with regard to additionality measures applied on unused land, i.e. severely degraded or abandoned). If different risk areas have been identified by remote sensing analysis, e.g. via satellite data or databases, the selection of the sample should also take into account results and findings from previous audits conducted in the area (if available).

Where appropriate and in accordance with the criteria for risk-based and random selection, the auditor may select group members in a way that facilitates a cost-efficient auditing process, e.g. by selecting group members that are located near each other. As long as there is no indication of non-conformity from specific group members, none of the successfully audited entities from the previous year shall be part of the sample in consecutive audits, as long as there remain some entities that have not yet been subject to an external audit.

The following factors bear specific relevance for group certification and must be considered by the auditor:

Factors related to the type and size:

- Size of the group member
- Type of operation
- Value and amount of the products
- Factors related to specific characteristics:
- Degree of similarity of the production systems and the crops or raw materials and applied additionality measures within the group
- Risks of intermingling and/or contamination

Experience gained:

- Number of years the group has functioned
- Number of new members registered yearly

- Nature of the problems encountered during audits in the previous years and results of previous evaluations of the internal audit system's effectiveness
- Management of the internal auditors' potential conflicts of interests
- Staff turnover

Additional specific regulations for certain regions / areas can be added if this becomes necessary, e.g. due to concrete risk with regards to additionality measures applied and/ or amount of additional yield indicated by group members.

Baseline group certification audits are always conducted on-site. If the external auditor detects one or more group members from the sample to be non-compliant with the low ILUC-risk requirements, or one or more group members refuse to participate in the audit, the sample size (s) of the current audit must be doubled. If in the increased sample, further group members are detected not fulfilling the low ILUC-risk requirements, the increased sample must be doubled again, and so forth. This process may continue until 100% of the group members have been audited. **Group members that are audited non-compliant must be excluded from the group and from the certification under low ILUC-risk**.

6 Small holders

In line with Delegated Regulation (EU) 2019/807, small holders who take an additionality measure are exempt from the financial attractiveness or non-financial barrier analysis requirement to prove additionality.

This chapter, supplemented with further guidance for small holders in Appendix IV, includes requirements for the certification of small holders under the low ILUC-risk approach. It further includes guidance on small holder training, with the purpose to provide small holders with knowledge on the potential yield increase measures, which can be applied, as well as on the necessary steps for the implementation of measures and the requirements to be fulfilled to successfully achieve certification.

6.1 Basics

In general, the requirements for low ILUC-risk certification described in this handbook also apply to small holders (e.g. including requirements for sustainability, sustainability of low ILUC-risk additionality measures and traceability). However, to reduce certain risks for small holders and to ease compliance with low ILUC-risk requirements for small holders, certain responsibilities can be shared between small holders and their central offices. Therefore, the compliance with the land-based sustainability requirements from Directive 2018/2001 should be verified through the application of remote sensing tools, while the soil related requirements are part of the regular on-site audit.

Small holders are in most cases certified as part of a group. Under the low ILUC-risk add-on, small holder group certification is not principally different from normal group certification. Each group member must comply with the criteria, including the above-mentioned limitation of two hectares (to be exempt from the additionality proof) and the ownership requirement.

Those small holders for which the remote sensing assessment did not detect land use change, can participate in the small holder group certification. For greenhouse gas emission, the disaggregated default value will be used for small holders. For all other sustainability criteria, a special training program can be set up (Train-the-trainer).

Subject to small holder group certification are the central office (CO), which is managed by the CO manager, and the small holders.

The following elements are relevant for the low ILUC-risk certification of small holders.

6.1.1 Definition of small holders

A small holder is defined by Delegated Regulation (EU) 2019/807 Article 2(9) as a farmer "who conduct independently an agricultural activity on a holding with an agricultural area of less than 2 hectares for which they hold ownership, tenure rights or any equivalent title granting them control over land, and who are not employed by a company, except for a cooperative of which they are members with other small holders, provided that such a cooperative is not controlled by a third party".

6.1.2 The central office

A CO is the representative body of at least one group of small holders that are certified as a group, and that are independent from a first gathering point or an oil mill. To get certified as a group, the small holder must be located in the same area and must be homogenous in terms of size, types of crop and production processes. A CO does not receive ownership of the low ILUC-risk materials. The CO is responsible for the following tasks:

- Small holder Management, i.e. training, internal audit of group members, inclusion of new small holders and exclusion of small holders, planning and documentation
- Responsibility for subcontractors, if relevant
- Administration, i.e. registration at the respective certification scheme, bookkeeping, supply chain documentation
- Management of funds (e.g. certification, external funds)
- A CO is audited with respect to the management system, traceability and chain of custody, as well as GHG emissions. A sample of all small holders that are members of the group is subject to an audit.

The elements of the supply chain are allowed to receive and supply low ILUC-risk material only after the receipt of a certificate. Relevant low ILUC-risk self-declarations have to be in place, chain of custody requirements have to be fulfilled and the dispatch of material as low ILUC-risk is only possible after the start of the certificate's validity.

APPENDIX

Appendix I – Worked examples for how to calculate the dynamic yield baseline and additional biomass

This section gives worked examples of how to calculate dynamic yield baseline and additional biomass in line with the methodology described in section 3.5.

Example 1: Oil Palm (perennial crop)

This worked example will use fictional data (see Table 1 below) and will walk through setting the dynamic yield baseline and calculating the additional biomass step by step. At the bottom of this worked example, a visual representation of the dynamic yield baseline and additional biomass can be found (Figure 13).

Table 9 below shows fictional 'actual' yield for a palm plantation. The trees were 7 years old when the additionality measure was taken (Y0).

Table 9.: Fictional actual yield data for oil palm plantation

Additionality Year	Y-3	Y-2	Y-1	Y0	Y1	Y2	Y3	Y4
Age of trees	4	5	6	7	8	9	10	11
Actual yield (FFB tonnes / ha)	12	11	15	19	22	18	25	22

1. First, we need to determine the starting point of the dynamic yield baseline, which is the average of last three years before the additionality measure was taken (Y-3 to Y-1). The starting point in this example is 12.67 t/ha.
2. To determine the shape of the curve, we can either use the percentage change or the normalized yield. Table 10 below contains both the percentage change and the normalized yield for the age of the trees. Using the starting point calculated in the previous step, we can calculate the rest of the dynamic yield baseline. The formula below outlines how to calculate Y-1 and can similarly be used to calculate the subsequent years to create a full curve.

$$Y_{-1} = 12.67 * (1 + 30.0\%)$$

Table 10.: Calculating the dynamic yield baseline

Additionality Year	Y-3	Y-2	Y-1	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Age of trees	4	5	6	7	8	9	10	11	12	13	4
Normalised curve (FFB tonnes / ha)	0.34	0.64	0.83	0.92	0.97	1.00	1.00	1.00	0.98	0.96	0.95
Annual change age weighted average yield (%)		90.6%	30.0%	10.0%	5.6%	2.9%	0.4%	-0.1%	-1.9%	-1.6%	-2.0%
Age adjusted YB (FFB tonnes / ha)		12.67	16.47	18.12	19.14	19.69	19.78	19.76	19.39	19.08	18.70

3. To make the baseline dynamic and account for yield increase in a business-as-usual setting, the compound average growth rate (CAGR) needs to be added. For palm, this is 1.07%.

Additionality Year	Y-2	Y-1	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
DYB (FFB tonnes / ha)	12.81	16.65	18.31	19.34	19.90	19.99	19.97	19.60	19.28	18.90

4. To calculate the additional biomass, we subtract the actual yield from the dynamic yield baseline.

Table 11.: Calculating additional biomass

Additionality Year	Y0	Y1	Y2	Y3	Y4
Actual yield (FFB tonnes / ha)	19	22	18	25	22
DYB (FFB tonnes / ha)	18.31	19.34	19.90	19.99	19.97
Additional yield (FFB tonnes / ha)	0.69	2.66	-1.90	5.01	2.03

5. In this example, in the first year (Y1) there is an additional biomass of 2.66 t/ha that can be claimed as low ILUC-risk. This can be multiplied by the area to get the total additional biomass that can be claimed as low ILUC-risk. However, in the second year (Y2) the actual yield is lower than the baseline and therefore no additional biomass can be claimed that year. In year three (Y3) additional biomass can again be claimed (5.01 t/ha).

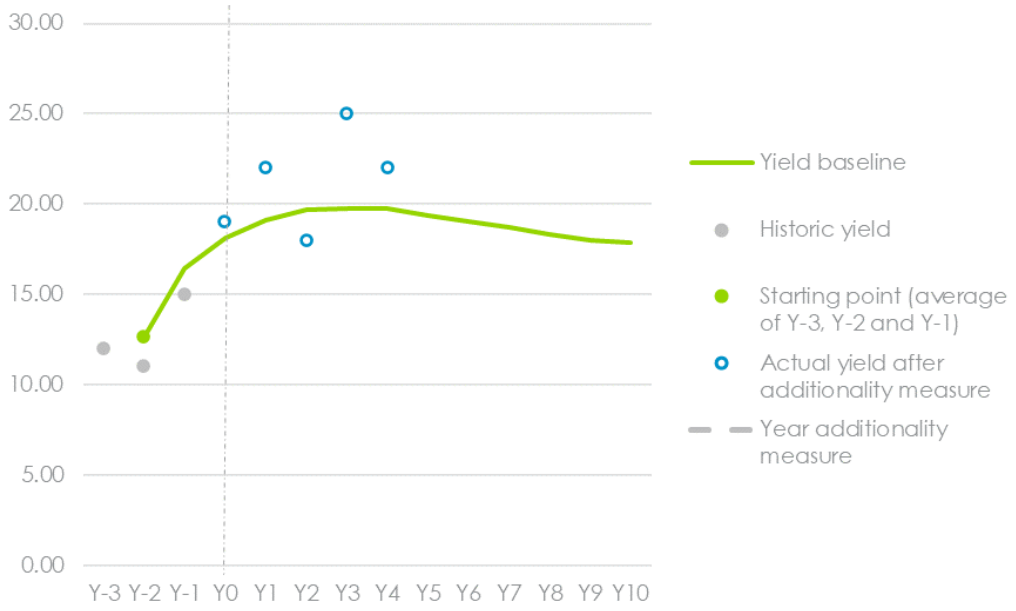


Figure 11.: Worked example dynamic yield baseline oil palm

Appendix II – Worked examples of NPV calculation

The figures below show illustrative examples of NPV calculations for a financial attractiveness additionality test of a fictional farm, following the methodology described in section 3.4.2.1.

On the first farm, the farmer invests 3000 USD capital and has an operating cost of 100 USD/yr related to the additionality measure. On the second farm, the farmer invests 5,500 USD capital and has an operating cost of 150 USD/yr related to the additionality measure. On both farms (for simplicity for the worked example), the farmer has an estimated additional yield of 2.2 tonne/ha after their investment in the additionality measure, with a feedstock sales value of 350 USD/tonne. The lifetime of this investment is 10 years at a discount rate of 5%.

In the first example farm, the NPV is **positive** so the project **would <u>not</u> pass** the financial attractiveness test and would have to move on to a non-financial barrier analysis to see if it is eligible for low ILUC-risk certification.

In the second example farm, the NPV is **negative**, so the project **would pass** the financial attractiveness test and is eligible for low ILUC-risk certification.

Financial Attractiveness Analysis

Aadditional CAPEX		$ 3,000	Capital investment for the additionality measure
Additional OPEX		$ 100	Additional annual operational costs expected for the addition
Discount rate	5%		
NPV		$ 2,432.24	

		Year										
		0	1	2	3	4	5	6	7	8	9	10
Profits												
Value												
Sales value	USD/tonne	0	770	770	770	770	770	770	770	770	770	770
NPV		0	770	733	698	665	633	603	575	547	521	496
Losses												
Value												
additional CAPEX	USD/ha	3000										
additional OPEX	USD/ha	100	100	100	100	100	100	100	100	100	100	
NPV		3100	95	91	86	82	78	75	71	68	64	

Figure 12.: Example 1. The NPV is positive and therefore this project would <u>not</u> pass the financial attractiveness additionality test

Financial Attractiveness Analysis

Aadditional CAPEX		$ 5,500	Capital investment for the additionality measure
Additional OPEX		$ 150	Additional annual operational costs expected for the addition
Discount rate	5%		
NPV		$ -473.15	

		Year										
		0	1	2	3	4	5	6	7	8	9	10
Profits												
Value												
Sales value	USD/tonne	0	770	770	770	770	770	770	770	770	770	770
NPV		0	770	733	698	665	633	603	575	547	521	496
Losses												
Value												
additional CAPEX	USD/ha	5500										
additional OPEX	USD/ha	150	150	150	150	150	150	150	150	150	150	
NPV		5650	143	136	130	123	118	112	107	102	97	

Figure 13.: Example 2. The NPV is negative and therefore this project would pass the financial attractiveness additionality test

Appendix III – Soil sampling protocol

In line with the soil sampling approach in Annex V of Implementing Regulation (EU) 2022/996, we recommend that 15 well-distributed sub-samples can be mixed into 1 composite sample per every 5 hectares or per field, whichever is smaller. The composite sample shall be at least 500 gram[27]. Smaller fields with the same climatic conditions, soil type and reference farming practice (if farming is present) can be grouped. Fields should be divided into sampling units where there are differences in key characteristics, such as:

- Climatic conditions
- Soil type, texture or slope
- Reference farming/management practises
- Observed crop/vegetation growth
- Other visual differences of the plot, such as colour differences indicated by the Munsell Soil Color

The samples shall be taken at regular intervals in a "W-shape" across the field. Samples shall not be taken at a 'low spot' in the field or areas with consistently high moisture content, see Figure 12 below.

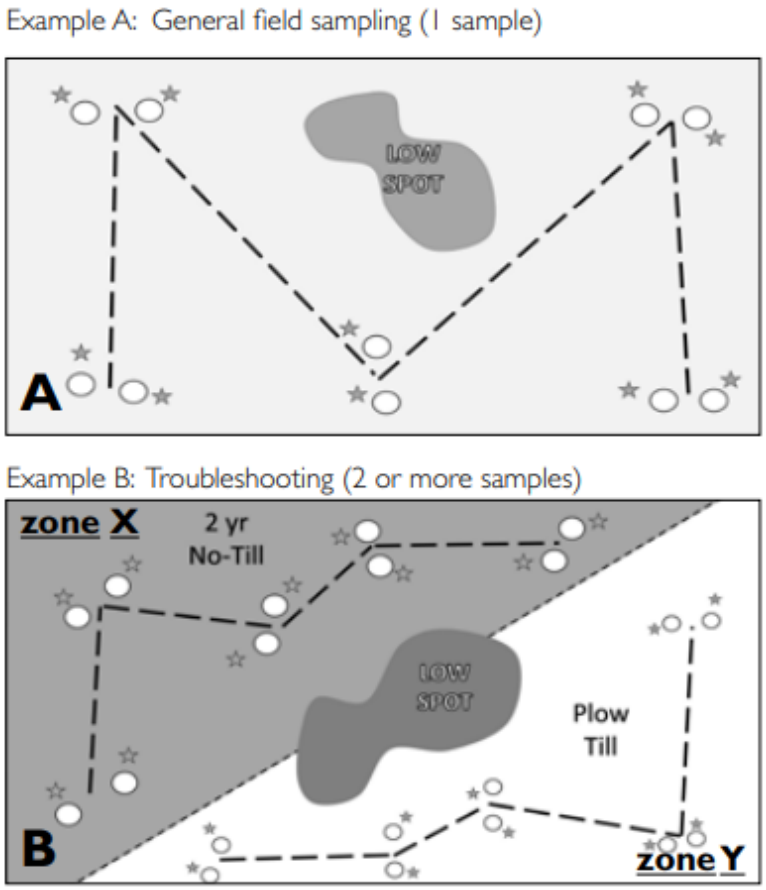


Figure 14.: Example soil sampling

[27] JRC (2018) LUCAS Soil Module: https://esdac.jrc.ec.europa.eu/public_path/shared_folder/dataset/75-LUCAS-SOIL-2018/JRC_Report_2018-LUCAS_Soil_Final.pdf

The samples shall be taken at 30cm of depth where possible. If the soil is less than 30cm in depth, then the deepest soil sample possible shall be taken. It shall be documented where the soil is thinner than 30cm and how many samples were taken that were less than 30cm in depth. The soil sampling process shall be well documented by marking sub-sample locations on a map and the field divisions shall be marked on the map. The differences in characteristics between the fields shall be documented.

The samples shall be taken either before soil cultivation and fertilization or a minimum of 2 months after harvest. Do not take soil samples after heavy rainfall or irrigation events.

There are two commonly used methods to extract soil samples: either by shovel (method 1) or with a metal ring (method 2).

Method 1

These steps are based on the framework compiled by Cornell University[28]. A practical step-by-step video (8 minutes) can be viewed here[29]. See figure 13 below for a visual representation of the steps.

The steps are:

1) Remove surface debris
2) Use a shovel to dig a small hole that is 35 cm deep
3) From the side of the hole, use the shovel to take a thick slice of soil at 30 cm deep
4) Remove any excess soil from the shovel and make sure it is level to have an even distribution of topsoil and subsoil
5) Place into clean pail
6) Repeat steps 1-5 for the 15 sub samples and mix thoroughly. Place into a clearly labelled and re-sealable 4-liter bag.
7) Before moving to another sampling location, make sure to clean the shovel to avoid soil contamination/or mixing the last sampling soil residues with the new sampling location

[28] Cornell University (2017) Comprehensive Assessment of Soil Health: http://www.css.cornell.edu/extension/soil-health/manual.pdf
[29] Please note that there are differences between the Cornell Framework and our soil sampling protocol. This video is for illustrative purposes only.

Figure 15.: Soil sampling protocol method[30]

Method 2

Similar to method 1, but instead of a shovel, a metal ring (30cm) is used to extract the soil. These steps are compiled by Regenerative Organic Alliance[31]. See figure 14 for a visual representation of the steps.

1) Remove surface debris and place the metal ring on the flat field surface
2) Place wood block on top of the metal ring and use it to drive the ring fully into the ground
3) Use a garden trowel to dig around the ring and carefully lift it with the trowel underneath
4) Make sure the sample is flat and even before putting it in a clean pail
5) Repeat steps 1-4 for the 15 sub samples and mix thoroughly in the pail. Place into a clearly labelled and re-sealable 4-liter bag.
6) Before moving to another sampling location, make sure to clean the shovel to avoid soil contamination/or mixing the last sampling soil residues with the new sampling location

[30] Cornell University (2017) Comprehensive Assessment of Soil Health: http://www.css.cornell.edu/extension/soil-health/manual.pdf
[31] Regenerative Organic Certified (2020) Soil Sampling Guidelines: https://regenorganic.org/wp-content/uploads/2020/06/ROC_June2020_Soil_Sampling_Guidelines.pdf

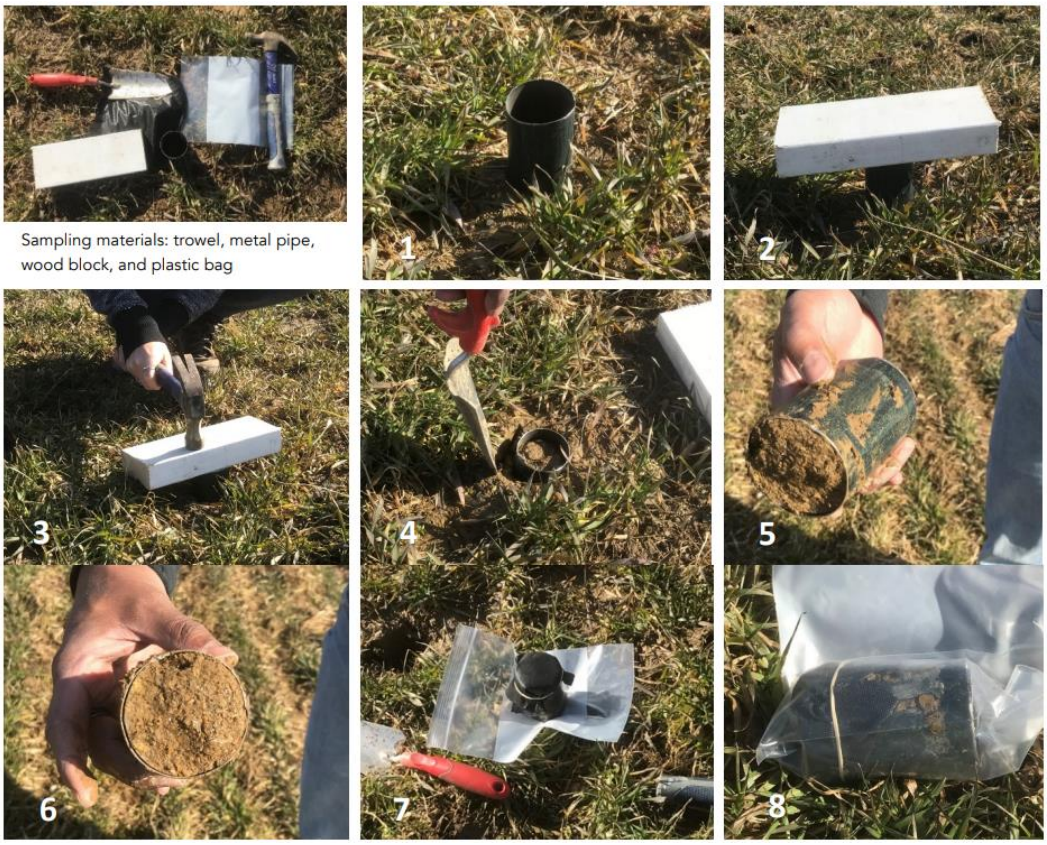


Figure 16.: Soil sampling protocol method[32]

After the samples are taken, the fresh soil shall not be stored in temperatures above 4 degrees Celsius or for more than 28 days after sampling,

[32] Regenerative Organic Certified (2020) Soil Sampling Guidelines: https://regenorganic.org/wp-content/uploads/2020/06/ROC_June2020_Soil_Sampling_Guidelines.pdf

Appendix IV – Further guidance on small holder certification

This guidance is provided in addition to the basic guidance for small holders in Chapter 6.

Certification requirements

As mentioned in Chapter 6, small holders that meet the definition in Delegated Regulation 2019/807 are exempt from proving compliance with the additionality requirement (financial attractiveness or non-financial barrier analysis). Nevertheless, they do have to complete a management plan, take an additionality measure and comply with the sustainability criteria.

Traceability and Chain of Custody

Traceability and chain of custody cover two basic requirements:

1. The possibility of tracing low ILUC-risk products back and forth throughout the supply chain from origin to final delivery
2. The possibility of assigning product specific information to consignments (batches) of low ILUC-risk materials and products

Traceability describes the information and documentation requirements of the relevant amounts and properties of low ILUC-risk materials. For small holders the same traceability requirements as described under section 3.6 are to be applied.

Group certification approach for small holder

For small holders a specific group certification process can be set up, if they are already certified under a voluntary scheme. This includes the steps "Preparation, Scoping & Risk assessment", "Management & Implementation", "Self-assessment, internal audit and certification", taken by the Central Office. The aim of the process is to support small holders to be eligible for low ILUC-risk certification.

Preparation, scoping & risk assessment

Preparation and Scoping includes certain actions for the company interested, that are the responsibility of the CO:

1. Pre-registering at the voluntary certification scheme
2. Provision of information on considered region
3. Initial risk assessment to identify risk areas and full remote sensing analysis for 'no risk' areas
4. Based on outcome, compliant regions can be considered for small holder group certification

For small holder certification, a landscape approach should be followed to ensure compliance with the land-related sustainability requirements. Therefore, the voluntary scheme conducts a land use change analysis with a remote sensing tool.

After pre-registering, the Central Office has to provide information on the considered region. This includes information such as geo-coordinates of the region and coordinates of the small holder land subject to low ILUC-risk certification. A risk assessment will be conducted by the respective certification scheme to identify risk areas (overlap of the considered region with protected areas, such as primary forests, peatlands or biodiverse grassland; verification of land-based sustainability criteria from the RED II) and a full remote sensing analysis in order to identify so-called Go- and No Go-areas. Based on the outcome, compliant small holders and Cos can be determined. These compliant small holders can participate in the small holder training, held by the respective certification scheme.

Management & implementation

After preparation and scoping, where a remote sensing analysis is performed to identify compliant small holders and set up of a CO, the formal group certification, as described in chapter 5 starts. The CO that would like to receive a low ILUC-risk certificate, must apply a group certification procedure that is split into four steps:

1. Training of CO

Training is an important feature for the successful integration of small holders in low ILUC-risk certification. The aim of the training for the CO is to make them aware of the low ILUC-risk certification and benefits of a certification and to explain the key framework of a certification, requirements and organizational adaptations for small holders and CO. As the access of small holders to low ILUC-risk training is a challenge, a "Train-the-trainer" concept is set-up. The "Train-the-trainer" concept is a three-level approach, whereby the voluntary scheme trains eligible parties or master-trainers (1st level), who then train the CO (2nd level). The CO trains all eligible small holders (3rd level).

1st and 2nd level trainings consist of four training modules including the introduction into sustainability and low ILUC-risk certification, small holder organisation and relevant documents. The 3rd level training consists of three modules. Where possible, low ILUC-risk trainings for small holders can be embedded into other existing training schemes such as trainings on Good Agricultural Practices. Any feedback from small holders, COs or the master trainer provided during the trainings shall be transferred to the respective certification scheme for inclusion into the training concept.

2. Registration of all potential group members in a management system (optional)

The CO and all small holders that shall be subject to certification, can be registered in a small holder IT system. Here, data for the CO and on small

holders are added to compare if results from the remote sensing risk assessment on land-related sustainability requirements match with the small holders in question.[33] Different IT solutions for small holder management including Apps for smartphones are available.

3. Identification of small holders compliant with the land-related sustainability requirements, small holder training & data acquisition

With the help of the IT system, the CO can check whether the coordinates of the small holders are within a critical area according to the remote sensing analysis. Therefore, the CO can include relevant small holder data or the small holders can use apps to access and modify its data within the Data Management System. If the coordinates of a small holder are within the critical area, the small holder cannot take part in the low ILUC-risk certification and has to be excluded from the small holder group certification program. If the small holder does not lie within a No Go area and thus, is compliant with the land-related sustainability requirements, then they can take part in the low ILUC-risk certification program. Small holders, who, according to the remote sensing analysis, converted land after January 2008, cannot provide self-declarations or data. Next steps for compliant small holders are further data acquisition and training.

To ensure a gradual improvement of small holders, a training program on low ILUC-risk certification is set up ("Train-the-trainer"). All small holders participating in the low ILUC-risk certification, need to participate in such a training.

After or during the training, further small holder information needs to be gathered. These data include information such as provided under 3.1 and 3.3. including information on yields, applied additionality measures and the information provided in the low ILUC-risk self-declaration or also the participation attestation for the training. They are listed in an Excel sheet and further integrated in the IT System being used.

Training and data acquisition can be conducted partly in parallel. During the low ILUC-risk training for small holders, the data requirements have to be provided to the small holders. The small holders can then also provide further data in the training, via the apps or even together with the signed self-declaration to the CO. At latest, these documents shall be provided to the CO during the internal audit.

4. Organizational adaptation

After identifying the small holder who are subject to low ILUC-risk certification, the respective organizational adaptations need to be applied. As the CO is the holder of the low ILUC-risk certificate, it is also responsible for the management and compliance of the small holders (including training, self-declarations, internal and external audits, administration such as

[33] As an example, please see the following link: https://www.gras-system.org/service-competence/our-services/smallholder-monitoring/

bookkeeping and supply chain documentation or also the management of funds and transportation).

Self-assessment, internal audit and certification

The final steps of a successful small holder low ILUC-risk certification are self-assessment and audits.

Not all small holders within the considered region need to be certified. Only small holders that are willing to get low ILUC-risk certified are subject to that certification add-on. If a small holder wants to get low ILUC-risk certified, then they must sign a self-declaration and provide it to the CO (step 1).

Based on the self-declarations, the CO will undertake internal audits (step 2). The internal audit covers the low ILUC-risk requirements for small holders and must be repeated annually. Within the 1st internal audit, all small holders who have provided a self-declaration need to be checked. From the 2nd internal audit on, at least the square root of all small holders must be checked annually (if no new small holders were added within the last year).

If new small holders are added and provide self-declarations during the year, raw materials from those small holders cannot be sold as low ILUC-risk certified until they have been subject to an internal audit. In order to verify compliance with the land-related sustainability requirements, the internal auditor has to compare the small holder field coordinates with the remote sensing analysis results. For verifying compliance with the sustainability requirements for soil quality and soil organic carbon, the internal auditor has to follow the audit procedures on-field.

If non-conformities are detected, corrective measures must be identified. The internal audit cannot be closed until those corrective measures have been implemented. If corrective actions have not been implemented within 40 days or if the small holders refuse to implement corrective actions, they must be excluded from group certification.

If the internal audit was successful, the auditor signs the audit report and hands it to the CO. The CO will mark the small holder as new low ILUC-risk-compliant group member. Materials delivered by this small holder can now be considered as low ILUC-risk compliant. A sample of all small holders that are members of the group is subject to an external audit.

As soon as the internal audit has been conducted, the CO and the small holder group can be subject to an external audit conducted by a CB (step 3). This includes four steps:

1 CO selects a CB

2 CO registers for certification with one of the recognized low ILUC-risk certification schemes

3 CB conducts the audit

4 CB issues the certificate and the respective certification scheme publishes certificate on website after internal review

A certification audit can only be conducted after a system usage agreement has been concluded with the certification scheme.

Among other information, the CO has to name at least one member of staff who can be contacted by the respective certification scheme for all matters regarding the registration or certification. These contact persons are responsible for internally distributing any communication on low ILUC-risk certification to all relevant members of staff.

The CO receives a certificate upon the successful completion of a certification audit by an eligible auditor as appointed by the CB with regard to compliance with the respective VS. Auditors can only conduct small holder audits after the successful participation in a small holder training for CBs. These audits are referred to as certification audits. Since certificates are valid for 12 months, a certification audit is conducted once a year. For the low ILUC-risk certification a baseline audit has to be conducted, which is then valid for 10 years. The calculation of the volume of additional biomass produced and claimed has then to be checked by an external auditor on an annual basis.

With the certification the compliance of the CO with low ILUC-risk requirements is proven. The low ILUC audit checklist includes requirements also for both, the small holder and the CO. The auditor must complete the audit procedures to prove evidence of compliance of an economic operator with the low ILUC-risk requirements. These procedures should also be used by CO to prepare for the audit as well as for the internal audits.

Within small holder certification, the auditor will check at the CO the compliance with the relevant sustainability and low ILUC-risk requirements, the bookkeeping and supply chain documentation as well as training documentation and participant lists. At the small holder, compliance with the applicable sustainability requirements, i.e. requirements for soil quality and soil organic carbon, correctness of the self-declarations and participation in the low ILUC-risk training is verified. Where subcontractors take certain tasks, the auditor will also check compliance with respective requirements. The procedure of small holder sampling and verification is further described in chapter 6 of this handbook.

Certificates are valid over a period of twelve months. Not all small holders have to be subject to certification directly. They can also be continuously added over time. However, raw materials from small holders can only be accepted as low ILUC-risk compliant if small holder successfully participated in a low ILUC-risk training, provided a self-declaration and were subject to an internal audit.