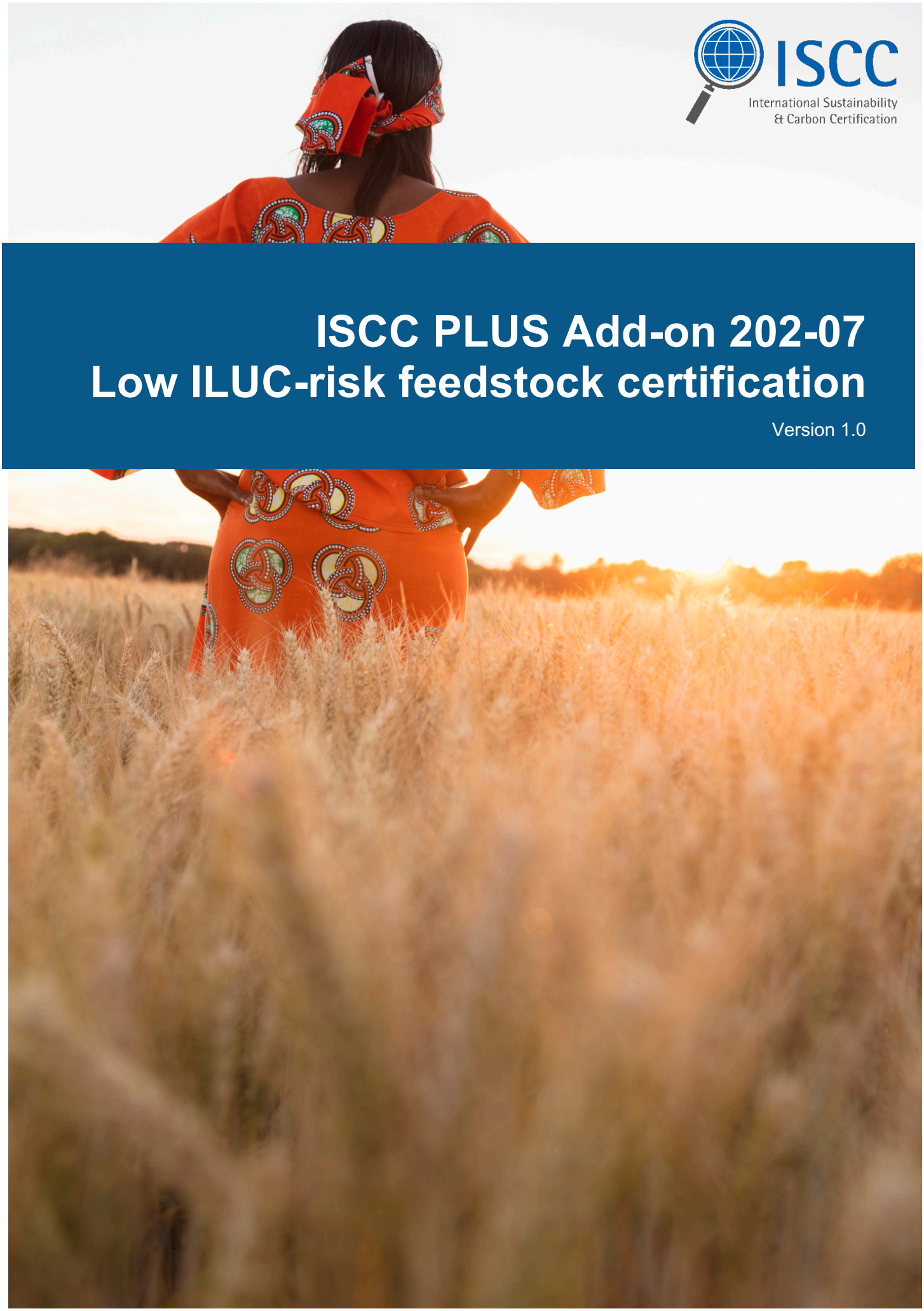

ISCC PLUS Add-on 202-07
Low ILUC-risk feedstock certification

Version 1.0

Document Title: ISCC PLUS 202-07 Low ILUC-risk feedstock certification

DRAFT Version 1.0

Valid from: July 2023

Content

1 Introduction

Low ILUC-risk feedstock definition

Indirect land use change (ILUC) can occur when the cultivation of crops for the production of biofuels, bioliquids or other products displaces the cultivation of crops for food and feed purposes and increases the pressure to extend agricultural land into non-cropland and possibly into areas with high carbon stock (such as forests, wetlands and peatlands). That in turn causes additional greenhouse gas emissions.

RED II regulation for low ILUC-risk feedstocks

In March 2019, the European Commission published a Delegated Regulation[1] that supplements the RED II by determining high ILUC-risk feedstocks (i.e., feedstocks for which a significant expansion of the production into land with high carbon stock is observed). Under certain circumstances, feedstocks classified to maintain a high ILUC-risk can be cultivated in a way to avoid these displacement effects and to even add additional value to the relevant production areas. Such feedstocks can be used for the production of biofuels, bioliquids and biomass fuels. Criteria for the certification of low ILUC-risk fuels are also laid down in the Delegated Regulation. Further, the European Commission (EC) also published an Implementing Regulation[2] with further guidelines and criteria for low ILUC-risk certification. Both documents are taken into account for the development of this document.

CORSIA framework for low LUC-risk feedstocks

In addition, the International Civil Aviation Organization (ICAO) set out sustainability requirements for sustainable aviation fuels (SAFs) under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) framework. Part of this framework is low Land Use Change (LUC) risk practices, setting out requirements for the certification of “additional biomass” being produced in agriculture.

The Guidance document “ISCC PLUS low ILUC-risk feedstock certification” sets out requirements for the certification of low ILUC-risk feedstocks under the ISCC PLUS scheme. The certification process is an “add-on” for farms/ plantations and First Gathering Points (FGP) which are already certified under ISCC PLUS aiming to prove compliance with these additional sustainability criteria for sustainable biomass. The requirements are based on the low ILUC-risk framework described by the EC and ICAO and were derived from ISCC PLUS pilot audits conducted as part of the Horizon 2020 project BIKE[3].

Low ILUC-risk feedstocks have to comply with the sustainability requirements for agricultural biomass as stated in ISCC EU System Documents 202-1 “Agricultural Biomass ISCC Principle 1” and 202-2 “Agricultural Biomass ISCC Principles 2-6”. Furthermore, economic operators must prove that they produce additional biomass using one of the following approaches:

> Cultivation on previously unused land

> Achieving additional yield increase

[1] Commission Delegated Regulation (EU) 2019/807 of 13 March 2019 as regards the determination of high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed and the certification of low indirect land-use change-risk biofuels, bioliquids and biomass fuels

[2] Implementing Regulation 2022/996

[3] https://www.bike-biofuels.eu

This document describes the process of the low iLUC-risk feedstock certification as well as the requirement to apply a financial attractiveness test and if required also a non-financial barrier test to evaluate additionality measures. Moreover, it specifies how to calculate the dynamic yield baseline and the additional biomass volume.

2 Scope and fields of application

ISCC EU System Documents apply also for ISCC PLUS

This document lays down the general principles for the certification of low ILUC-risk feedstocks and the products derived from them. Furthermore, it describes the preparation and implementation of the set requirements as well as the system boundaries. The document includes a description of the use of relevant measures to be used by auditors in order to verify/ assess additionality measures applied on the different types of land. Specifications for group auditing and smallholders will be provided, as well as requirements for auditors and auditees. For accurate planning of the audit(s), this guidance document will entail information on audit preparation for both auditees and auditors and clear guidance for audit planning, execution, and documentation.

As the ISCC PLUS and ISCC EU certification schemes are widely harmonized, the ISCC EU System Documents in general apply for ISCC PLUS. This means that the ISCC EU System Documents also serve as system documents for the ISCC PLUS scheme. There are some different requirements between ISCC EU and ISCC PLUS, which are described in the ISCC PLUS system document.

As a basic principle, all ISCC EU and ISCC PLUS documents published on the ISCC website in their latest applicable version are valid and must be considered for the scope of application.

Low ILUC-risk certification as an add-on

This guidance document shall be considered as an add-on to the basic ISCC EU and ISCC PLUS certification for farms/ plantations and first gathering points (FGPs), providing the requirements for a low ILUC-risk add-on certification for feedstocks and guidance for their implementation and verification.

3 Low ILUC-risk certification process

3.1 Registration and auditing process

Cooperation with a certification body

To start the certification process, an economic operator (EO) has to submit an application to a certification body (CB) cooperating with ISCC for low ILUC-risk biomass certification under ISCC PLUS. The applicants may be farms or plantations and groups of smallholders, farms and/ or first gathering points (FGPs) acting on behalf of the smallholders[4] and farms.

[4] See section 8.4 for more information on smallholders

Content of the low ILUC-risk application

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[5];

(b) a description of the low ILUC-risk additionality measure 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);

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

As part of the application, a precise calculation of the expected additional biomass and a self-assessment on whether the measure is additional are optional.

If the application is made after the additionality measures have been implemented, only the additional biomass produced as per their implementation after the actual date of the low ILUC-risk certification may be claimed as low ILUC-risk.

The certification application is ideally made before the implementation of the additionality measure, but low ILUC-risk certification can be applied for up to ten years after the implementation of an additionality measure if appropriate data and evidence are available to allow for certification.

The baseline audit must be conducted after the implementation of the additionality measure

After the registration process, the baseline audit has to be conducted by the CB. The baseline audit aims to verify the management plan and establish and document the dynamic yield baseline against the management plan.

An ISCC PLUS audit procedure is available ensuring that all low ILUC-risk audits are conducted on the basis of the requirements specified in this guidance document. The audit procedure supports the work of the CBs and facilitates a consistent and comparable verification of the low ILUC-risk requirements during low ILUC-risk certification audits. CBs have to use the document provided when conducting ISCC PLUS low ILUC-risk audits. System Users can use the audit procedure to conduct internal assessments, for internal training or to prepare for an audit.

After the audit has been conducted, the CB submits the filled-out audit procedures to ISCC. In line with the general ISCC PLUS certification, the CB includes the relevant audit results in the audit report. The ISCC PLUS low ILUC-risk certificate will be issued by the CB after a successful audit process and published separately

[5] *If applying for group certification, the application must 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.*

on the ISCC website. Verification audits for low ILUC-risk certification take place annually (annual additionality audits).

In the event that the external audit showed that the audited System User did not meet the requirements of the ISCC low ILUC-risk certification, the audit procedures must be submitted to ISCC immediately after termination of the audit.

3.2 Auditor qualification

Auditors must have relevant expertise for low ILUC-risk certification

In addition to the requirements for ISCC PLUS auditors laid out in the ISCC PLUS system document, he/ she must have the appropriate skills necessary to conduct the audit, and the CB must have the appropriate general skills necessary to perform audits. Besides this, the auditor must have the relevant expertise for low ILUC-risk certification including knowledge and professional experience in the following fields:

(a) Land use characteristics and land categories

(b) Strong background in agriculture, plant production, land management or a related field

Further, the respective low ILUC-risk auditor must have expertise in the assessment of yield increase measures and the verification of the land categories relevant for ISCC PLUS low ILUC-risk certification, i.e., unused land or severely degraded land respectively. Further, he/she must be capable of assessing applied yield increase measures in the context of yield increases on the farm/ plantation.

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

3.3 Content of the management plan

Basic information on the low ILUC-risk measure is documented in the 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:

(a) Description of the farm and the land area (selected site) for which the relevant measure has been implemented (maps & GIS data) including information on historic land management (proof of historic and actual land status)

(b) Definition of the delineated plot of land, (geographic coordinates (with a precision of 0.1 Metres for each measuring point))

(i) Total area of the agricultural operation (total area of the agricultural unit, size of the total area cultivated)

(ii) Total area of agricultural operation where additionality measure(s) were applied (delineated area) in ha

(c) Description of additionality measures and date of initial (or planned) application;
   (i) 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.
   (ii) 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.
   (iii) An explanation of the expected future yield growth.

(d) Check on the sustainability of the additionality measure;

(e) Name and type of crops (annual/perennial) relevant for low ILUC-risk certification including date of sowing and harvesting;

(f) Total amount harvested (metric tons, short: mt) for the relevant crop (historical data to be used for baseline audit, actual data for following audits)

(g) Where relevant, demonstration of additionality assessment (either financial attractiveness or non-financial barrier analysis);

(h) Determination of the dynamic yield baseline, including:

   (i) For yield increase measures: at least three years of historical crop yield data related to the delineated plot of land;

   (ii) For cultivation on unused, abandoned or severely degraded land:

      (1) Proof of land status;

      (2) The baseline yield for cultivation on unused, abandoned or severely degraded land is considered to be zero.

(i) Estimation of the additional biomass yield per year, concerning the dynamic yield baseline for the delineated plot.

The management plan is needed to compare the situation before and after the implementation of the measure

The management plan must allow a comparison to be made between the use of the delineated plot before and after the implementation of the additionality measure. Every system user must have the management plan available at the beginning of each audit to allow for the verification of all documents.

The economic operator will have to demonstrate that the management plan sets reasonable expectations on the yield increase by referring to 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.

4 Definition of the delineated plot of land

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 "basic" certification process. In some cases, 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.

Description of the delineated plot of land

The delineated plot needs to be described for each plot of land upon which an additionality measure is applied. 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. The following information must be provided:

(a) Description of the delineated plot (including for example the plot number where relevant);

(b) Surface area

(c) Ownership/ status of lease of the land;

  (i) Description of recent history at minimum 3 years before the implementation of the additionality measure in the case of plots of land for which the additionality measure has been implemented within the last ten years

  (ii) Acquisition dates as per contract of a newly acquired plot of land (in the case of a purchase or a lease).

  (iii) 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;

  (iv) Status of the farm, where delineated plot is identified: individually certified, part of a first gathering point, member of a group of farms/ plantations

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, 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).

5 Description of the additionality measure

Additionality measures must go beyond "business-as-usual"

Additionality measures are measures that go beyond common agricultural practices on a fixed area of land (i.e. without expanding the surface of the land). Measures, or combinations of measures, shall boost output without compromising sustainability. The additionality measure shall not compromise future growth 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 the homogenisation of the agricultural landscape through the removal of landscape elements and habitats such as solitary trees, hedgerows, shrubs, field edges or flower strips.

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:

(a) 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.

(b) 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.

(c) An explanation of the expected future yield growth.

The described additionality measure must be included in the following table which indicates a non-exhaustive list of additionality measures applicable for low ILUC-risk certification. The list is controlled by ISCC. In the case of a new measure being applied, the economic operator will contact ISCC for the measure to be evaluated and added to the list in case it is found to be valid.

Additionality category	Additionality measure	Example
Replanting (for perennial cro	Choice of crop varieties	Higher yield variety, better adaptation to physiological or climatic conditions.
Mechanisation	Machinery	Adoption of machinery that redu complements existing workforce inpu boost output or reduce losses. This c include sowing, precision farming, harves machinery or machinery to reduce p harvest losses.
Multi-cropping	Sequential cropping	Introduction of second crop on same lar the same year.

[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'.*

Additionality category	Additionality measure	Example
Management	Soil management	Mulching instead of plowing, low tillage.
	Fertilisation	Optimisation of fertilisation regime, us precision agriculture.
	Crop protection	Change in weed, pest and disease contr
	Pollination	Improved pollination practices.
	Other	Leaves room for innovation, combinatior measures and unforeseen developments

Table 1: Non-exhaustive list of additionality measures

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 may be considered to be additional compared to a 'business as usual' development. A similar level of proof is needed for additionality measures that enable unused land to be brought back into use.

Measure must be taken no longer than ten years before certification

The additionality measures must be taken no longer than ten years before the certification under "ISCC PLUS 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.

6 Sustainability of the additionality measure

The additionality measure must achieve additional biomass/ yields

An additionality measure may only be certified if it aims to achieve additional yields as a result of an improvement in agricultural practice. Measures, or combinations of measures, shall boost output without compromising sustainability. The additionality measure shall not compromise future growth 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 the homogenization of the agricultural landscape through the removal of landscape elements and habitats such as solitary trees, hedgerows, shrubs, field edges or flower strips. 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 abandoned or severely degraded land, in which case the cultivation itself is the additionality measure.

The ISCC 202 criteria for agricultural biomass must be fulfilled

The low ILUC-risk certification must be in line, i.e. can only be provided if the economic operator complies with all sustainability saving requirements laid out in the ISCC EU 202-01 and ISCC EU 202-02[7]. Therefore, a low ILUC-risk certificate can only be issued to farmers that are certified under ISCC including all delineated plots. 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 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.

7 Demonstration of additionality

Producers must prove the additionality of their measure

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. Thus, it must be demonstrated that the implemented measure(s) become financially attractive or face no barrier preventing their implementation. The chosen options and the respective data and calculations must be included in the management plan and verified during the baseline audit.

Additionality does not have to be demonstrated by smallholders in this way for measures on land that is abandoned or severely degraded, but it is a requirement for measures which bring unused land back into production. A verifiable additionality measure needs to be applied to be able to claim that additional crops for biofuel have been produced on a delineated plot of land.

[7] *ISCC EU 202-1 – Agricultural Biomass: ISCC Principle 1 & ISCC EU 202-2 – Agricultural Biomass: Principle 2-6*

There are two options to prove additionality: financial attractiveness or barrier test. Depending on the preference of the economic operator, either a financial attractiveness test and/or a barrier test can be prepared and included in the management plan.

Two options to prove additionality

7.1 Financial Attractiveness Test

The financial attractiveness test shall 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 additionality measure investment.

The test shall include only those costs and yields that are directly related to the additionality measure investment. Normal operating costs of the entire farm shall therefore not be included in the analysis. The costs and revenues included in the analysis shall be related to the preparation, implementation, maintenance and decommissioning of the additionality measure that would not have been otherwise incurred.

The financial attractiveness test is determined via NPV calculation

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 premium) shall pass the financial additionality test and become eligible to be certified as low ILUC-risk. Outcomes above zero (a positive NPV) may still be eligible only if they pass the non-financial barrier analysis.
Formula to calculate the NPV of an investment:

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

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)[9]

i = discount rate

t = time period

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

[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 https://www.investopedia.com/terms/n/npv.asp*
[9] *CAPEX meaning capital expenditures, OPEX meaning operating expenses*

The following parameters shall be included in the NPV calculation:

(a) estimate of additional biomass volume;

(b) feedstock sales price (currency/tonne):

  (i) the feedstock sales price may be a single number extrapolated over the lifetime of the additional yield investment;

  (ii) 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;

  (iii) in the event of introducing a new crop for which the economic operator does not have actual price data, this value may be based on price data from FAOSTAT[10]

(c) discount rate to be used: 3.5% for high-income countries and 5.5% for all other countries;

(d) lifetime of the investment:

  (i) a lifetime of ten years shall be used in conformity with the lifetime of the low ILUC-risk certification (baseline validity);

  (ii) 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);

(e) investment cost related to the additionality measure (CAPEX + OPEX).

7.2 Non-Financial Barrier Analysis Test

The non-financial barrier analysis shall be used for non-financial project barriers

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 analysis rather than in the non-financial barrier analysis. The non-financial barrier test shall therefore be used only in very exceptional cases.

The economic operator that plans the additionality measure is responsible for justifying the existence of non-financial barriers. The justification shall consist of a clear, verifiable description of the situation that prevents the uptake of the additionality measure. The economic operator shall provide all the necessary verifiable evidence to support the claim and demonstrate how low ILUC-risk certification would ensure that the non-financial barrier is overcome.

[10] *FAOSTAT producer prices. Source: http://www.fao.org/faostat/en/#data/PP*

The validity of the operator's claim shall be assessed and validated by the baseline audit before issuing a low ILUC-risk certificate.

8 Cultivation on unused, abandoned or severely degraded land

Additional biomass can be cultivated on previously unused land

New crop production on unused land, abandoned agricultural land or severely degraded land can qualify as an additionality measure. All production on land which meets the definitions of "abandoned" or "severely degraded" can be certified as additional and there is no need for any other additionality measure such as a demonstrable increase in yield. For cultivation on unused land, a test to demonstrate additionality (e.g. financial attractiveness test or non-financial barrier analysis test) must be applied.

In the case of cultivation on unused, abandoned and severely degraded land, the economic operator needs to describe and provide evidence for the land status as part of the management plan. The land status will be checked as part of the baseline audit by the certification body at the beginning of the certification process. Further, for the cultivation on unused land, it needs to show that cultivation has little risk of displacement of services from that land onto different and equivalent amounts of land elsewhere. In the case of production on unused, abandoned or degraded land, the dynamic yield baseline shall be set to zero with no trend line.

8.1 Cultivation on unused land

Unused land

Eligible lands for the "unused" land approach could include, among others, marginal lands, underused lands, unused lands, degraded pasture lands, and lands in need of remediation. For a land to be eligible for the unused land approach, economic operators shall provide evidence that for a consecutive period of at least five 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.

8.2 Cultivation on abandoned land

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 due to biophysical or socioeconomic constraints.

For land to qualify as abandoned land, the economic operator shall provide additional evidence that food or feed crops were once grown on the delineated area before the consecutive period of at least 5 years of unused land. That evidence shall also prove that the production ceased for biophysical or socioeconomic reasons.

Biophysical changes which adversely affect the growing food and feed crops may include, but are not limited to, the following event:

(a) An increased frequency of severe weather events such as droughts, storms or floods;

(b) Changes in seasonal temperature patterns which affect plant physiology;

(c) Increase pests and diseases;

(d) Damage to irrigation systems;

(e) Damage to the soil such as severe salinization, depletion of organic matter and erosion rendering them “severely degraded”.

Socioeconomic factors adversely affecting the economic viability of production, leading to the abandonment of the land may include, but are not limited to, the following events:

(a) changes in market prices: (for example increased input or labour costs, or both, or reductions in the price fetched by finished crops);

(b) labour becoming unavailable (for example as a result of migration);

(c) failure of the supply chain (for example through the closure of a local market or a transport link);

(d) disputes about ownership (for example in the context of inheritance);

(e) political instability (for example confiscation or nationalization of the land).

8.3 Cultivation on severely degraded land

Severely degraded land

‘**Severely degraded land**’ means land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and has been severely eroded. To prove compliance with this definition, economic operators shall provide relevant soil test results:

(a) in the case of salinisation, the results of testing by a qualified agronomist of the electroconductivity of the soil using the saturated paste method;

(b) in the case of low soil organic matter, results from an appropriate number of samples of soil from the delineated plot, determined by a qualified agronomist, using the dry combustion method;

(c) in the case of severe erosion, at least 25 % of the delineated plot shall have been eroded as determined by a qualified agronomist, supported by photographs.

8.4 Smallholders

Definition of smallholders

Smallholders are farmers that independently cultivate and manage an agricultural activity on a holding with an agricultural area of less than 2 hectares for which they hold the ownership, tenure rights or any equivalent title granting them control over the land area and who are not employed by a company, except for a cooperative of which they are members with other smallholders, provided that such a cooperative is not controlled by a third party. Smallholders are exempt from proving additionality.

9 Determination of the dynamic yield baseline

Determination of the DYB

The economic operator must calculate the dynamic yield baseline (DYB) and document this as part of the management plan in case of yield increase measures. The dynamic yield baseline is used to determine the amount of additional biomass. The dynamic yield baseline must be crop-specific, determined for each delineated plot and can be determined for each type or a combination of additionality measure(s) applied.

The dynamic yield baseline shall be set individually for each delineated plot based on the crop and the type or combination of additionality measures applied. 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. This shall be combined with a global crop-specific trend line for expected yields based on historical data of actual yields over the past decade, or longer if data is available. For perennial crops, the dynamic yield baseline also takes into account the yield curve over the lifetime of the crop.

For farmers choosing the measure of previously unused, abandoned or severely degraded land, the dynamic yield baseline is set to zero (meaning that the starting point is zero). Any yield on these types of land is considered to be additional.

9.1 Setting the dynamic yield baseline for annual crops

DYB for annual crops

Where a farm rotates crops between fields and the target crop has been planted in different fields on the same farm in previous years, two options are envisaged for gathering the historical yield data in order to calculate the dynamic yield baseline:

Two options can be applied

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 data that is more than five years old.

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 plots 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, additional data may be obtained for previous 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, a discrepancy of 30% 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.

Crop yield data quality shall also be taken into consideration. This is the case if a plot size varies too much for the three years upon which the average is based (for example, if the smallest plot size is less than 10% of the largest plot size in the years selected).

The auditor is responsible 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 then decide whether a crop yield needs to be excluded or not.

The slop of the DYB is crop-specific and based on FAO data

The slope of the dynamic yield baseline shall be taken as the slope of a straight trend line fitted for yield developments of the target crop over the previous ten years. It is based on global data and shall be derived from the FAOSTAT World+ data for the relevant crop. This shall be done at the start of the certification period, and the slope shall be valid for the ten-year baseline validity period of the low ILUC certification.

Table 2 shows the slope of the dynamic yield baseline for the most common biofuel feedstock crops. These values are obtained by fitting a trend line over 20 years of global crop data obtained from FAOSTAT.

Crop	Slope-20*	Crop	Slope-20*
Barley	0.035	Sugar beet	1.276
Maize	0.074	Sugar cane	0.379
Oil palm fruit	0.200	Sunflower seed	0.035
Rapeseed	0.036	Wheat	0.04
Soybean	0.028		

*Slope 20 is based on 2008-2017

Table 2: Slope of the trend line obtained for FAOSTAT World+ crop yield data. The average improvement in yield (tonne/ha/year) per year.

For any crop in the table, the dynamic yield baseline (DYB) is determined by taking the starting point (three-year average of historical yields prior to application of the additionality measure) and adding the global trend line (slope). The following formula shall be used, starting at the year the additionality measure is implemented:

DYBx = (starting point DYB) + (slope20)x

Where:

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

x= year(s) after implementation of the 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 be determined based on historical yield and trend line data for the existing crop.

The starting point of the baseline shall be the three-year average of the crop yield obtained for the lower performing existing crop. The trend line is based on the global FAOSTAT trend line data for the existing crop (see Table 2). 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.

If an additionality measure is taken on a novel biofuel crop for which there is no FAOSTAT data as a basis for the trend line, it may be defined by using the slope of the most closely related crop derived from global FAOSTAT data.

9.2 Setting the dynamic yield baseline for perennial crops

DYB for perennial crops

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

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

(a) the cultivars of palm trees on the delineated plot;

(b) the planting year of palm trees on the delineated plot of land and/or their age profile;

(c) the area of land replanted each year on a plantation, if applicable;

(d) the historical crop yields obtained prior to the implementation of an additionality measure.

That data is combined with a growth curve applicable to the cultivars on the plot to determine the dynamic yield baseline. The key characteristic of the growth curve shall be the shape, not the magnitude of the yield.

The growth curve gives the shape and it needs to be combined with the data set out in points (a) to (d) to adjust the magnitude of the dynamic yield baseline curve to the specific plot (that is to say, adjustment on the basis of the historical yields and age of trees).

Three options to determine the DYB for perennial crops

The following three options are available for determining the dynamic yield baseline for palm trees. For each of those options, the data required to set the dynamic yield baselines must include:

Option 1a: Standard growth curve

(a) age of trees on the delineated plot/ planting year;

(b) three most recent years of historical crop yields for palm trees grown on the delineated plot;

Option 1b: Economic operator provides growth curve[11]

(a) age of trees on the delineated plot/planting year;

(b) three most recent years of historical crop yield for palm trees grown on the delineated plot;

(c) the cultivars of palm trees on the delineated plot;

(d) Economic operator's own reference growth curve.

Option 2: Group certification approach

(a) for the most recent years, the total hectares and total yield in fresh fruit bunches (FFB) for palm trees grown on the delineated plot/plantation(s), producing palm as part of the group.

Options 1a and 1b apply where the age profile of the trees on the delineated plot does not remain constant year after year.

Option 2 may be applied when the age profile of the trees on the delineated plot is mixed and remains constant year-on-year, that is to say in a group certification approach or if a constant percentage of the plantation area being replanted each year, resulting in a constant age profile for the trees.

Option 2 shall not be used if more than 20% of the volume in the group comes from the same plantation, or if more than 5% of the total area in the group is being replanted in the same year. In that case, option 1a or b shall be used to determine the baseline.

[11] To use this option, economic operators have to show that the correlation between the standard growth curve and their baseline growth curve is less than 0.8

Option 1a: Standard growth curve

Use of a standard growth curve for palm

This 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 the figure below.

The dynamic yield baseline is determined by using the three most recent years of historical crop yield data for the specific plot and the age of the palm trees when that yield was observed, ad using the annual percentage yield change from the standard curve to form a business-as-usual yield curve relevant to the specific plot.

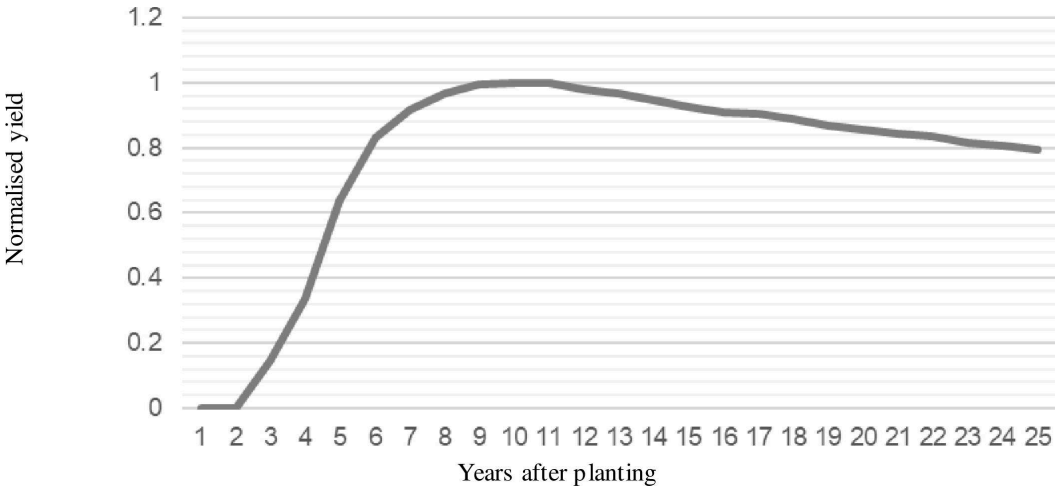

Figure 1: Standardised growth curve[12]

Option 1a involves the following methodological steps:

(a) 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;

(b) Calculate an average (mean) of the three historical crop yields;

(c) 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 year 8);

(d) 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, derived from the standard growth curve (Table 4 below). Repeat this for each subsequent point to plot the dynamic yield baseline;

[12] Source: EC, IR 2022/996

Option 1b: Economic operator provides the growth curve

DYB based on a company-specific growth curve

This option may be used in exceptional cases if the economic operator can demonstrate that option 1a 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 1a 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.

The plot-specific growth curve shall still be corrected for global yield development using the CAGR calculated FAOSTAT World+ yield data which is 1.37%[13].

Option 2: Group certification approach

DYB for group certificaiton

In the case of group certification, or when a first gathering point or mill acts as the unit of certification, the dynamic yield baseline may be set using a similar 'straight line' dynamic yield baseline approach as used for annual crops. 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 3 years. This is used to determine the yearly yield per hectare for each of the last 3 years (in tonnes/ha). These data points are then averaged and used as the starting point for the dynamic yield baseline. The starting point is combined with the global trendline slope for oil palm from FAOSTAT World+ data to determine the dynamic yield baseline.

Sugar cane shall be treated as an annual crop when setting the dynamic yield baseline.

9.3 Setting the dynamic yield baseline for sequential cropping

DYB for sequential cropping

If multi-cropping practices such as sequential cropping are used to optimise land use and this leads to a situation where overall farm yields are increased but the new (target) crop lowers the yield of the main (primary) crop, this shall be compensated in the calculation of low ILUC-risk biomass. The economic operators have three options to calculate the additional biomass.

1. Demonstrate that the second crop does not lower the yield of the main crop.

2. If the second crop lowers the yield of the main crop:

[13] Based on FAOSTAT World+ 2008-2017 data, IR 2022/996

a) Determine a dynamic yield baseline for a system in which the main crop is the same each year;

b) Determine a compensation factor for a system in which the main crop is different each year.

Three options to determine the DYB for sequential cropping

Option 1: Demonstrate that the second crop does not lower the yield of the main crop

If an economic operator can demonstrate that the introduction of the second crop does not lower the yield of the main crop, the whole yield of the second crop can be claimed as additional biomass.

This may be demonstrated, for example, by comparison of the observed yield of the main crop before (3-year historical average) and after the introduction of the second crop.

Option 2a: Determine a dynamic yield baseline for a system in which the main crop is the same each year

The dynamic yield baseline shall be based on the 'business as usual situation for the delineated plot of land. When the main crop is the same each year, the baseline shall be determined based on at least the 3-year average historical yield of the main crop on that plot, combined with the global trend line for the main crop, as is done for annual crops.

This approach may also be used when the crop rotation follows a clearly defined rotation pattern that can be observed from historical data, which enables the business-as-usual situation to be clearly determined. In this case, it may be necessary to use data older than 3 years to determine the average historical yield of the main crop.

After the implementation of sequential cropping, the net additional biomass shall be calculated as the difference between the total annual yield from the delineated plot of land (that is to say, the yield of the main crop plus the yield of the second crop) and the main crop dynamic yield baseline.

If the main and second crops are different feedstocks that produce a different combination of crop components (for example, oil, protein meal, starch, fibre), when the main crop and second crop yields are added together, the calculation shall be based on appropriate units of measurement to allow for the calculation of a single representative figure for the net additional biomass produced. Respectively, the methodology shall allow for an effective compensation of the biomass loss of the main crop. For example, the calculation can be done on a simple weight (tonnes) basis or an energy content basis (e. g. if the full second crop is used for energy, such as for biogas). The choice of methodology shall be justified by the economic operator and validated by the auditor.

Option 2b: Determine a compensation factor for a system in which the main crop is different each year

When the main crop differs each year in the crop rotation and does not follow a regular pattern, the economic operator needs to assess any loss in yield of the main crop due to the second crop and to take it into account in the volume of additional biomass claimed.

The effect of the secondary crop on the main crop needs to be taken into account

The economic operator needs to compare the observed yield of the main crop after the introduction of the second crop with the historical yield of the same (main) crop. That comparison may be done based on observed yields in neighbouring fields (e.g. if the same farm grows the same crops on rotation but in different fields), or on the basis of justified scientific literature that describes the impact of sequential cropping on those crops in that region.

The impact on the yield of the main crop shall be translated into a compensation factor that shall be deducted from the volume of the second crop to calculate the additional biomass. As for Option 2a, the factor can be based on weight or energy content and shall allow for an effective compensation of the biomass loss of the main crop. The choice of methodology shall be justified by the economic operator and validated by the auditor.

10 Determination of additional biomass volume

Additional biomass must be determined by on the DYB and actual yields achieved

After implementation of the additionality measure, the economic operator must be obliged to record the actual crop yield achieved each year on the delineated plot to be able to determine the actual volume of low ILUC-risk biomass that may be claimed. This is done by comparing the crop yield achieved with the dynamic yield baseline. In the ongoing annual audits, the auditor must verify 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.

The dynamic yield baseline shall be established by setting out a starting point, based on historical yield from the delineated plot, which shall be determined by the principles set out in section 9. The actual yield for a delineated plot after implementation of the additionality measure shall be compared against the baseline. The difference between the actual yield and the dynamic yield baseline is the additional feedstock eligible to be claimed as low ILUC-risk.

11 Requirements for Traceability

For the scope of the low ILUC-risk certification, the requirements 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. In addition to the criteria for traceability set out under ISCC PLUS, the following information must be included by the first gathering point for low ILUC-risk certified material on the respective delivery documents (e.g. sustainability declarations)

Information on low ILUC-risk quantities must be included on the Sustainability Declaration

- 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