



Guidance on Sustainability of Biomass Fuels

Version 1.01

Guidance to accompany the procedure for verifying that Participants in support schemes or renewable energy obligations demonstrate biomass fuels meet the sustainability and GHG emissions savings criteria of SI 350 of 2022

6 December 2023

Change Log

Version	Date	Section	Change
1.01	6 December 2023	Entire document	First version of Guidance released

Disclaimer

This document provides guidance to accompany the Procedure that SEAI has established to verify that Participants in a support scheme or renewable energy obligation have demonstrated that Biomass Fuels fulfil sustainability and greenhouse gas emissions savings criteria. (Reference: Regulation 8(1) of S.I. 350 of 2022).

This document does not constitute a legal interpretation of the law. Neither does it constitute legal advice. Before making decisions you should consult with your professional advisors. No party shall be entitled to rely solely on any information provided in this document.

Guidance version update

SEAI reserves the right to update this guidance (the "**Guidance**") from time to time, as deemed appropriate. Check the SEAI website to ensure that you have the latest version.

Sustainable Energy Authority of Ireland

SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

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Glossary of Terms

Term	Description
Biofuel	Liquid fuel for transport produced from biomass
Bioliqid	Liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass
Biomass Fuels	Gaseous and solid fuels produced from biomass
Certification Body	Certification bodies under RED II Voluntary Schemes ensure that Biomass Fuels, Biofuels, and Bioliqids meet sustainability and GHG criteria. They also certify businesses involved in producing, processing, and supplying these fuels, including producers, traders, and processors.
GHG	Greenhouse Gas
Independent Verifier or Verifier	Company/individual appointed by a Participant to independently verify information required to be submitted to SEAI in line with this Procedure
ILUC	Indirect land use change
ISAE 3000	International Standard on Assurance Engagements 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information
IVR	Independent verification report prepared by an Independent Verifier
MJ	Megajoule (1 MJ = 0.277778 kWh)
MW	Megawatt
Participant(s)	Economic Operators participating in support schemes or renewable energy obligations
PoS	Voluntary Scheme proof of sustainability
RED II	The recast Renewable Energy Directive, Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast)
SI 350	Statutory Instrument 350 of 2022
Voluntary Scheme	Voluntary national or international scheme recognised by the European Commission in accordance with Article 30(4) of RED II. Voluntary Schemes are entities that help to ensure that Biofuels, Bioliqids and Biomass Fuels are sustainably produced by verifying that they comply with the EU sustainability & GHG emissions savings criteria of RED II.

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1 Overview

1.1 Purpose

This Guidance accompanies the *Procedure for verifying that participants in support schemes or renewable energy obligations demonstrate biomass fuels meet the sustainability and GHG emissions savings criteria*. The purpose of the Procedure is to set out what Participants in support schemes or renewable energy obligations (the Participants) need to report to SEAI – the Guidance provides support on how to do that and why it is necessary.

The Guidance also assists Participants and economic operators in the biomass fuel supply chain understand the requirements of the Procedure and the underlying legislation, and systems, schemes and supply chain that exist for establishing and demonstrating biomass fuels satisfy the sustainability and GHG emissions savings criteria set out in RED II (and transposed into Irish law by SI 350).

1.2 Structure

The Guidance contains three main sections and an annex.

- **Section 1** provides the context for SEAI’s Procedure and an introduction to the governing legislation and sustainability and GHG emission savings criteria. It also describes the role of Voluntary Schemes in certifying the biomass supply chain and how SEAI’s Procedure relies on this certification process.
- **Section 2** offers detailed guidance and interpretations for the corresponding Section 2 in the Procedure. It describes in detail the installation information and the sustainability and GHG emissions data that must be submitted to SEAI annually. Furthermore, Section 2.4 expands on the Irish context for sustainability and GHG emission savings criteria.
- **Section 3** explains the verification and auditing processes, and clarifies the requirements, roles, and responsibilities involved.

In addition, Annex 1 contains a description of the relevant regulations set out in SI 350. It provides further information on interpreting the requirements and how they interact with each other.

The Guidance is designed to be used in tandem with the Procedure and thus the structures of both documents are aligned, as illustrated in Table 1.

Table 1: Alignment of SEAI’s Procedure & Guidance

Section	Procedure	Guidance
1	Introduction	Overview <ul style="list-style-type: none"> • Purpose • Structure • Key concepts • Legislation (SI 350, RED II, Implementing Regulations) • Sustainability and GHG emissions savings • Sustainability compliance (Voluntary Scheme certification, Verification & auditing) • Summary
2	Information to be submitted annually. Regulation 10 (1)	Information to be submitted annually

Section	Procedure	Guidance
2.1	Overview	Overview
2.2	Installation information	Installation information
2.3	Statement of compliance with the sustainability & GHG emissions savings criteria	<ul style="list-style-type: none"> • Statement of compliance (section 2.3) • Sustainability & GHG emissions savings criteria (Section 2.4) <ul style="list-style-type: none"> ○ Agricultural Biomass ○ Forest Biomass ○ GHG emissions savings (sources of GHG emissions) ○ Mass balance ○ GHG emissions savings (default values, calculation).
2.4	Other supporting information	-
3	Verification & Auditing	Verification & Auditing
3.1	Overview	<ul style="list-style-type: none"> • Overview • Obligation to maintain records and report to SEAI • Information to be reported annually (evidence)
3.2	Independent verification report	<ul style="list-style-type: none"> • Independent Verification Report • Assurance Engagement (ISAE 3000, Independence, professional competencies, verification activities) (Section 3.6) • Roles and responsibilities (Independent Verifiers, Participants) (Section 3.7)
3.3	Independent Auditor's Report	Independent Auditor's Report (Section 3.4)
3.4	Combined IVR and Auditor's Report	Combined IVR and Auditor's Report (Section 3.5)
3.5	Summary	-
4	Submission of Information	-

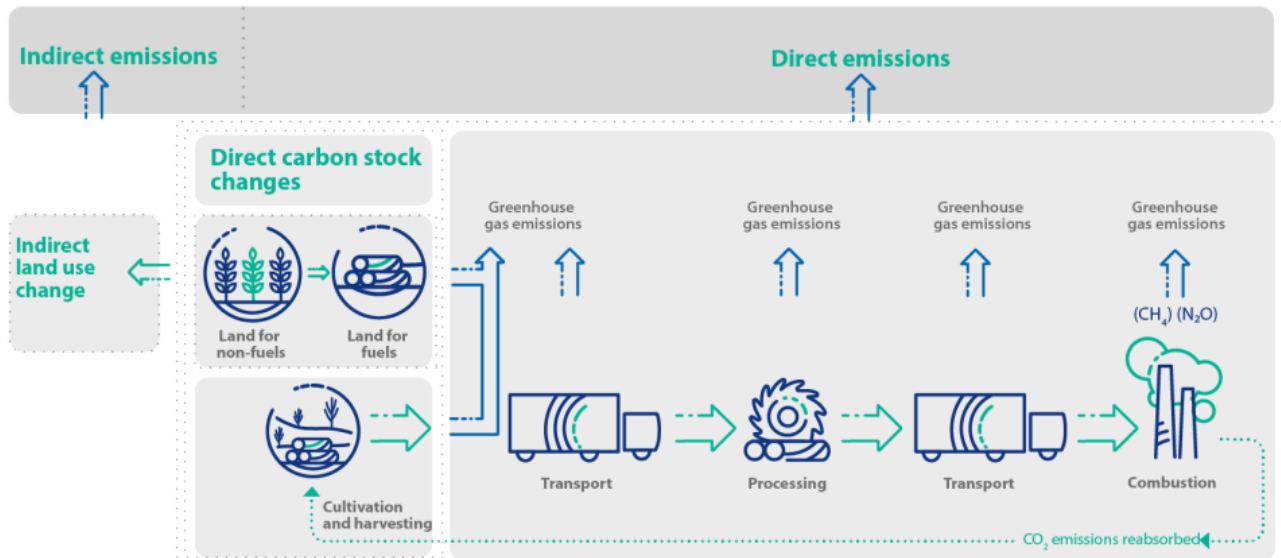
1.3 Key Concepts

1.3.1 GHG Emissions

While this Guidance describes many of the concepts associated with the verification Procedure, there are two key elements worth introducing at the outset. The **GHG emissions savings calculation** methodology is described in detail in Section 2.4.5, but, in summary, it is a lifecycle approach and is illustrated in Figure 1 – it includes direct emissions associated with the supply chain (from cultivating, harvesting, processing and transporting the biomass), combustion, and from direct carbon stock changes. There are also indirect emissions, which are not included in the GHG emission calculation, but are taken into consideration in the

sustainability criteria and by limiting the use of 'high ILUC¹-risk' biomass fuels.

Figure 1: Lifecycle emission sources



1.3.2 Voluntary schemes

Another important concept to understand is the **Voluntary Scheme system**, which is a cornerstone for demonstrating compliance with the sustainability and GHG emission savings criteria. Voluntary Schemes are legislated for in Article 30 of RED II. Article 30 sets out how companies operating in the supply chain demonstrate to Member States that the sustainability and GHG emission saving criteria have been met, it describes the information that needs to be passed along the supply chain, and it requires the use of a mass balance system. It also establishes an option for the European Commission to recognise Voluntary Schemes as a means for economic operators to demonstrate to Member States that a biomass fuel is compliant with the sustainability and GHG emissions savings criteria. As noted in the previous paragraph, biofuels have been required to demonstrate compliance with the sustainability and GHG emissions savings criteria for some time and the Voluntary Scheme system has played a central role in doing so.

For Participants in Ireland, the only means available for demonstrating compliance is by using a European Commission approved Voluntary Scheme or the national scheme of another Member State. Voluntary Schemes are discussed further in several sections of this guidance, but it's critical that Participants are themselves Voluntary Scheme certified, or have purchased biomass fuel from a supplier that is certified by an EU Commission approved Voluntary Scheme or a national scheme of another Member State – there are no alternative means of demonstrating to SEAI that the sustainability and GHG emissions savings criteria have been met.

¹ Indirect land use change (ILUC) can occur when land previously used food or feed production is converted to produce biofuels, bioliquids and biomass fuels. In that case, the food and feed demand still needs to be satisfied, which may lead to the extension of agricultural land into areas with high carbon stock such as forests, wetlands and peat land, causing additional GHG emissions.

1.4 Legislation

1.4.1 Renewable Energy Directive

In November 2016, the European Commission published a proposal to revise and extend the Renewable Energy Directive to cover the period 2021 to 2030. The revision, RED II, extended the scope of the sustainability requirements to include solid and gaseous biomass used for heating, cooling and electricity generation; it was agreed by the European Council, Parliament and Commission and adopted in December 2018. RED II sets out the overall policy for the promotion and use of energy from renewable sources in the European Union.

In the context of SEAI's Procedure to demonstrate compliance with the sustainability and GHG emissions savings criteria, RED II sets out what the criteria are, the verification requirements, the reporting requirements, and the methodology for calculating GHG emissions from biomass fuels. RED II applies the criteria to biomass fuels if they are used in installations producing electricity, heating and cooling or fuels with a total rated thermal input greater than 20 MW in the case of solid biomass, and 2 MW in the case of gaseous biomass. RED II also sets out the sustainability and GHG emissions savings criteria for biofuels (liquid fuels used in transport) and bioliquids (liquid fuels used for electricity generation or heating and cooling).

RED II applies to all Member States and thus, while the obligation to demonstrate compliance with the sustainability and GHG emissions savings criteria is a new regulatory requirement being placed on the biomass fuel supply chain, biomass fuel consumers and producers in all Member States will be seeking to ensure compliance. The requirement to demonstrate compliance with sustainability and GHG emissions savings criteria is also not a new concept. Biofuels supplied to the transport sector in Ireland have been required to demonstrate compliance since 2010. For biofuels, there is an established industry that supports the biofuel supply chain in assessing the sustainability of biofuels, calculating their GHG emissions savings, and maintaining the integrity of the chain of custody of the biofuel from the point at which the feedstock is grown, through transportation, to biofuel production and finally end user consumption. RED II sets out these requirements for the supply chain and this guidance will explain the requirements.

1.4.2 SI 350 of 2022

SI 350 transposed RED II into Irish law in July 2022. SI 350 designates SEAI as the competent authority for *biomass fuels* and sets out several obligations on the Authority related to biomass sustainability, including establishing '*a procedure to verify that participants in a support scheme or renewable energy obligation have demonstrated that biomass fuels fulfil the sustainability and greenhouse gas emissions savings criteria*' (Regulation 8). A summary of each regulation relevant to the Procedure and Guidance is provided in Annex 1 along with a list of all the regulations contained in SI 350.

For Participants to benefit from a support scheme or contribute to compliance with a renewable energy obligation, the biomass fuel must fulfil the sustainability and GHG emissions savings criteria (Regulation 5). The Regulations do not preclude Participants from using non-sustainable biomass fuel, but electricity, heating and cooling, and fuels produced from such non-sustainable fuel do not qualify for support or count towards renewable energy obligations.

Therefore, Participants must comply with the requirements of SEAI's Procedure to be granted support or to have the biomass fuel count towards a renewable energy obligation.

1.4.3 Commission Implementing Regulations

The European Commission published implementing regulations to support the RED II regulatory regime for demonstrating and verifying compliance with the sustainability and GHG emissions savings criteria. These include:

- Implementing Regulation 2022/996 on rules to verify sustainability and greenhouse gas emissions saving criteria and low indirect land-use change-risk criteria; and
- Implementing Regulation 2022/2448 on establishing operational guidance on the evidence for demonstrating compliance with the sustainability criteria for forest biomass.

Regulation 2022/996 is primarily aimed at Voluntary Schemes.

- It sets out the general rules for Voluntary Schemes on governance, internal monitoring, complaints and transparency (Chapter 2).
- It specifies the audit process to be carried out by certification bodies when certifying economic operators to a Voluntary Scheme standard, the competence of the auditors, and what is to be audited (e.g. mass balance, GHG emissions calculations). It also covers the requirements on Member States to supervise the operation of certification bodies (Chapter 3).
- It specifies the rules for implementing the mass balance, the union database², and establishing the GHG emissions and biological fraction of fuels (Chapter 4).
- It also sets out the specific rules on complying with the low ILUC-risk certification (Chapter 5).

Regulation 2022/2448 provides guidance on implementing the risk-based sustainability criteria for the production of biofuels, bioliquids and biomass fuels from forest biomass. It is worth noting that compliance with the guidance may be demonstrated via national or Voluntary Schemes.

1.5 Sustainability and GHG Emissions Savings Criteria

Schedule 3 of SI 350 sets out the sustainability and GHG emissions savings criteria and transposes Article 29 of RED II. The objective of the sustainability and GHG emissions savings criteria are to ensure that biomass fuels contribute to GHG emission reductions without impacting on the biodiversity and carbon stock of the environment from which the feedstocks were sourced, and do not contribute to indirect land-use change. Schedule 3 contains three overarching sustainability criteria, which relate to:

- Land for agricultural biomass
- Management of forest biomass
- GHG emission savings for all biomass fuels

Biomass fuels produced from agricultural biomass shall not be made from raw material obtained from land with high biodiversity value, with high carbon stock, or that was peatland. Agricultural biomass is discussed in Section 2.4.

For biomass fuels produced from forest biomass, the country of origin of the biomass must meet the following LULUCF³ requirements:

1. is party to or has ratified the Paris Agreement;
2. **and** has submitted a Nationally Determined Contribution (NDC) to the UNFCCC or there are laws in

² While the scope of the Union Database may increase, it is not currently used for solid biomass fuels. It will be used for biomethane, as well as bioliquids and biofuels, to track and trace the movement of such fuels through the supply chain and enhance the integrity of the mass balance system.

³ Land Use, Land Use Change and Forestry.

place (in accordance with the Paris Agreement) to conserve and enhance carbon stocks and sinks;

3. **or** has a national system for reporting GHG emissions and removals from land use including forestry and agriculture.

If the above are not available, management systems at the *forest sourcing area level* will need to be in place to ensure that the carbon stocks and sinks levels in the forest are maintained for the long term. Forest biomass is discussed in Section 2.4.3.

All biomass fuels used for electricity, heating and cooling shall achieve a minimum 70% GHG emission saving, for installations starting operation from 2021; this increases to 80% for installations that start operating from 2026. Sections 2.3 provides guidance in respect of the information to be submitted in accordance with Section 2 of the Procedure. Section 2.4 describes the sustainability and GHG emissions savings criteria in more detail and provides Participants and economic operators in the biomass fuel supply chain with information on how compliance may be established and demonstrated.

1.6 Sustainability Compliance

1.6.1 Voluntary Scheme Certification

SEAI has not established a *national scheme* for Ireland, as allowed for under Regulation 8 (2) of SI 350. Instead, demonstrating compliance with the sustainability and GHG emissions savings criteria must be fulfilled by certification of a national scheme of another Member State, or certification by a Voluntary Scheme approved by the EU Commission. While national schemes of other Member States may play a role in certifying biomass that is placed on the market in Ireland, based on the experience of the National Oil Reserves Agency (NORA) in administering the Renewable Transport Fuel Obligation (RTFO) in the transport sector, SEAI expects Voluntary Schemes to play a central role in ensuring the sustainability and GHG emissions savings criteria can be demonstrated as being fulfilled.

Voluntary Schemes are private companies that have established sustainability standards for biomass fuels that can be implemented by companies that operate in the biomass fuel supply chain. The Voluntary Schemes must be approved by the European Commission. SEAI has no role in approving or managing Voluntary Schemes.

Voluntary Schemes have a suite of rules and requirements that must be implemented by companies that wish to become Voluntary Scheme certified. Certification bodies, which are approved by the Voluntary Schemes, audit companies to certify that the rules and requirements of the Voluntary Scheme have been implemented correctly. There is an initial certification audit and at least one annual re-certification audit carried out thereafter. Voluntary Scheme certification is arranged by the company wishing to be certified with the Voluntary Scheme and the certification body. SEAI does not recommend or approve Voluntary Schemes or certification bodies.

A list of all the approved Voluntary Schemes is available on the European Commission's website (https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en). Note that not all Voluntary Schemes are approved by the Commission for all biomass fuel, feedstock, geographical origin and chain of custody combinations. While there are currently fifteen approved schemes, not all schemes cover all fuel types (biofuels, bioliquids, biomass fuels, recycled carbon fuels and renewable fuels of non-biological origin), feedstocks (e.g. agricultural biomass, wastes and residues, and forest biomass), or all countries around the world. The Commission's website set out what each Voluntary Scheme covers.

1.6.2 Verification & Auditing

SEAI's verification Procedure relies on Voluntary Scheme certification (or national schemes of other Member

States) of the supply chain. It is a cornerstone of SEAI's approach that sustainability and GHG emissions savings data is supplied along the entire supply chain, from biomass cultivation to transportation to conversion into a biomass fuel. Thus, the data submitted to SEAI relies on the integrity of the Voluntary Scheme system (or the national scheme(s) of other Member States).

Given this reliance, the requirements for independent auditing and verification, as required under Regulations 10 and 12 of SI 350, therefore, only apply to the sustainability and GHG emissions savings data that is submitted to SEAI and the records that are used to generate that data. These data are transmitted along the supply chain via **Proofs of Sustainability** (also referred to as sustainability declarations). These documents represent the sustainability and GHG emissions savings records that must be independently verified and audited. Records of sustainability criteria related data shall be maintained for each consignment and, as part of the verification, it, and the data submitted to SEAI, shall be verified and audited.

Relying on EU approved Voluntary Schemes and national schemes of other Member States in this way helps SEAI and Participants minimise the administrative burden of compliance.

Section 3 of this guidance describes the verification and auditing requirements in more detail and provides Participants with information on how compliance may be established and demonstrated. It provides guidance in respect of Section 3 of the Procedure.

2 Information to be submitted Annually

2.1 Overview

The purpose of this section is to support Participants to comply with section 2 of the Procedure and assist Participants and economic operators in the biomass fuel supply chain to understand the requirements of the Procedure and the sustainability and GHG emissions savings criteria. *(The corresponding sections in the Procedure are given in brackets).*

- **Section 2.2** of the Guidance describes the installation information to be included in the submission forms. *(Procedure Section 2.2)*
- **Section 2.3** describes the sustainability and GHG emissions savings information to be included in the submission forms. *(Procedure Section 2.3)*
- **Section 2.4** describes activities that precede the Procedure. It identifies useful information to support the process of gathering sustainability criteria data and calculating GHG emission data for biomass fuels in Ireland. This section will be of interest to stakeholders involved in the sustainability certification of biomass fuels in Ireland.

The requirement to submit information to SEAI is set out in Regulations 10 and 14 of SI 350 – Regulation 15 also places a requirement on SEAI to submit information to the Minister, which needs to be gathered from the Participants. Regulation 6 sets out who needs to demonstrate compliance with the sustainability and GHG emissions savings criteria. The requirements of Regulations 6, 10, 12 and 14 are explained in Annex 1.

2.2 Installation Information

To establish the applicability of the sustainability and GHG emissions savings criteria, and the additional information required to be submitted, information about the installation needs to be submitted to SEAI. Section 2.2 of the Procedure details the information to be submitted.

To assist Participants to prepare and submit accurate information, Table 2 describes each of the items of information that may need to be submitted to SEAI and provides guidance on how to interpret what is being requested.

Table 2: Interpretation of Installation Information

No	Installation information & description
1	Whether the installation consumes / produces solid or gaseous biomass fuels At the time of preparing this Guidance, there are no installations that only <u>produce</u> biomass fuels which are Participants in a support scheme or renewable energy obligation. Thus, only installations that consume biomass fuels will be reporting whether solid or gaseous biomass fuels are being used.
2.	Electricity only installation Please report whether the installation only produces electricity as this determines what subsequent information will be required to be submitted.
3	The total thermal rated input of the installation producing electricity, heating and cooling or fuels The ' <i>total thermal rated input</i> ' is not defined in SI 350 or RED II. For the purpose of SEAI's Procedure, the total thermal rated input is that specified by the manufacturer and displayed on the plant. Where different fuels or fuel mixes can be used, leading to different maximum thermal inputs, the highest possible value should be used. When no information from the manufacturer is available, it should be estimated based on best available information – the maximum fuel

No	Installation information & description
	<p>throughput achieved in 24h during the last calendar year, for example. Net calorific values (NCV) should be used. (See also Annex 1, section 4.2.2.)</p> <p>Where there are changes to the installation resulting in changes to the thermal rated input during the reporting period, the higher input value should be reported.</p>
4.	<p>The date the installation started operating or was converted to use biomass</p> <p>An installation is considered to be in operation once the physical production of fuel, heat or cooling, or electricity has started.</p>
5	<p>For an installation that started operating or was converted to use biomass fuel after the 25th December 2021:</p> <ol style="list-style-type: none"> where the thermal rated input of the installation is between 50 and 100 MW, if high-efficiency cogeneration is applied or, for electricity only installations, if the installation meets an efficiency level associated with best available techniques, as defined in Commission Implementing Decision (EU) 2017/1442; where the thermal rated input of the installation is greater than 100 MW, if high efficiency cogeneration is applied or, for electricity only installations, achieve a net-electrical efficiency of at least 36%; if CO₂ capture and storage is employed at the installation. <p>Cogeneration is defined in Annex VI, Part B as <i>'the simultaneous generation in one process of thermal energy and electricity and/or mechanical energy'</i>.</p> <p>High-efficiency cogeneration is cogeneration that meets the following criteria, as specified in Annex II of Directive 2012/27/EU⁴:</p> <ul style="list-style-type: none"> cogeneration production from cogeneration units that provide primary energy savings of at least 10 % compared with efficiency reference values for separate production of heat and electricity; production from small-scale and micro-cogeneration units that provide primary energy savings may qualify as high-efficiency cogeneration. <p>The following guidance in relation to efficiency level associated with best available techniques is from Commission Implementing Decision 2017/1442⁵: <i>An energy efficiency level associated with the best available techniques (BAT-AEEL) refers to the ratio between the combustion unit's net energy output(s) and the combustion unit's fuel/feedstock energy input at actual unit design. The net energy output(s) is determined at the combustion, gasification, or IGCC [Integrated gasification combined cycle] unit boundaries, including auxiliary systems (e.g. flue-gas treatment systems), and for the unit operated at full load... BAT-AEELs are expressed as a percentage. The fuel/feedstock energy input is expressed as lower heating value (LHV).</i></p> <p>The BAT-AEELs for solid biomass combustion plants are 33.5% to greater than 38% for new units, and 28% to 38% for existing (see Table 8 of Commission Implementing Decision 2017/1442). While there is no explicit BAT-AEEL for biogas, there is BAT-AEELs for gaseous fuels which include</p>

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02012L0027-20230504>

⁵ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1442#:~:text=Commission%20Implementing%20Decision%20\(EU\)%202017,\(T ext%20with%20EEA%20relevance.%20\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1442#:~:text=Commission%20Implementing%20Decision%20(EU)%202017,(T ext%20with%20EEA%20relevance.%20))

No	Installation information & description
	<p>natural gas. Table 23 of Commission Implementing Decision 2017/1442 sets out the net electrical efficiencies for a range of combustion units.</p> <p>The following guidance in relation to Net-electrical efficiency is also from Commission Implementing Decision 2017/1442: <i>Ratio between the net electrical output (electricity produced on the high-voltage side of the main transformer minus the imported energy — e.g. for auxiliary systems' consumption) and the fuel/feedstock energy input (as the fuel/feedstock lower heating value) at the combustion unit boundary over a given period of time.</i></p>
6.	<p>For an electricity-only installation that started operating, or was converted to use biomass fuel, after the 25th December 2021:</p> <ol style="list-style-type: none"> if fossil fuel is not used as the main fuel; if an assessment under Article 14 of the Energy Efficiency Directive has been carried out, and if the finding was that there was no cost-effective potential for high-efficiency cogeneration technology to be applied. <p>The 'main fuel' requirement means that the majority of the fuel must be biomass, i.e. >50%.</p> <p>Article 14 (5) of the Energy Efficiency Directive (EED) requires a cost-benefit analysis to be carried out for new thermal electricity generation installations with a total thermal input exceeding 20 MW, or an existing thermal electricity generation installation with a total thermal input exceeding 20MW is substantially refurbished. Annex IX Part 2 of the EED gives guidance on carrying out the analysis. Electricity-only installations are required to demonstrate that there is no potential for a cost-effective high-efficiency cogeneration option in order for the biomass to be considered sustainable.</p>
7	<p>For an installation that came into operation after 31st December 2020, the electrical or heating efficiency of the installation</p> <p>RED II Annex XI, Part B defines the <u>electrical</u> efficiency as '<i>the annual electricity produced divided by the annual energy input, based on its energy content</i>' and the <u>heat</u> efficiency '<i>as the annual useful heat output divided by the annual energy input, based on its energy content</i>', where useful heat is '<i>heat generated to satisfy an economical justifiable demand for heat, for heating or cooling purposes</i>'.</p> <p>An installation is considered to be in operation once the physical production of fuel, heat or cooling, or electricity has started (i.e. once the production of fuels including biofuels, biogas or bioliquids, or production of heat, cooling or electricity from biomass fuels has started).</p>

2.3 Statement of compliance with sustainability and GHG emissions savings criteria

The statement, which is to be submitted in SEAI's submission form available from www.seai.ie/technologies/bioenergy/verification-procedure/Verification-of-Biomass-Sustainability-Procedure-Forms.xlsm, shall include, for each consignment, the items of information set out in Section 2.3 of the Procedure. Table 3 below lists each item being requested and provides further detail and explanation on what each item is and why it is important.

Table 3: Sustainability and GHG emissions savings data

No.	Item
1	The consignment identification number

No.	Item
	To enable the Participant to track consignments, and for reference purposes. This is a unique identifier assigned by the Participant.
2	Support scheme / renewable energy obligation The support scheme or renewable energy obligation that the biomass fuel consignment counts towards.
3	The quantity of fuel Expressed in megajoules (MJ). The energy content of each consignment of biomass fuel supplied to, or consumed in, an installation will be contained in Voluntary Scheme proofs of sustainability.
4	Type of biomass fuel The main fuel types are woodchips, wood pellets, biogas, agricultural biomass. If supplying other fuel types that are not included in the submission form drop-down menus, contact SEAI.
5	The feedstock This is the feedstock (raw material) from which the fuel is made, e.g. straw, manure and forestry residues. As with the type of biomass fuel, if using other feedstocks not listed in the submission form drop-down menus, contact SEAI.
6	The country of origin of the feedstock The country from which the feedstock originated, i.e. where it was grown or became a waste or residue.
7	The name of the voluntary or national scheme under which the consignment is certified It is a requirement that biomass fuels supplied to the market in Ireland be certified under a Voluntary Scheme, or certified under the approved national scheme of another Member State. Three columns are provided to report the Voluntary Scheme(s) which cover the renewable fuel. More than one Voluntary Scheme can be selected to demonstrate compliance with one or more of the sustainability and GHG savings criteria, but the schemes must be approved by the European Commission and cover the relevant sustainability and GHG savings criteria. If the renewable fuel feedstocks are wastes and residues derived from agricultural land, it should be ensured that the Voluntary Scheme is approved for demonstrating compliance with Article 29(2) ⁶⁶ of RED II. It is a similar case for forest biomass where, at present, the forest criteria (RED II Articles 29 (6) and (7)) are covered by a minority of approved voluntary schemes.
8	The fuel end use Heating/cooling, heating with coal substitution, or electricity generation.
9	If plant came into operation after 1 January 2021, the carbon intensity of the fuel

⁶⁶ While most Voluntary Schemes are approved to demonstrate compliance with Article 29(2), some, such as Red Tractor and RTRS EU, are not.

No.	Item
	This field is used to report the carbon intensity expressed in gCO _{2eq} /MJ of the biomass fuel. This data will be sourced from proofs of sustainability (PoS) provided by Voluntary Scheme certified suppliers, or possibly generated by the Participant, if it is Voluntary Scheme certified.
10	<p>If plant came into operation after 1st January 2021, the GHG emission savings</p> <p>This is what determines compliance with the GHG emissions savings criteria. If this value is greater than or equal to 70%, then the GHG emission savings criteria are met. Plants that came into operation before 1st January 2021 are not required to report this value.</p> <p>The GHG emissions savings are reported relative to a fossil fuel comparator. The methodology for calculating GHG emissions savings is set out in Section 2.4.5.</p> <p>For fuels used to produce electricity, heating and cooling it is the gCO_{2eq} per MJ of electricity, heating and cooling produced that is used to determine the emissions saving. Where a Participant is not itself certified under a Voluntary Scheme (or a national scheme of another Member State), the Participant will need to calculate the GHG emission savings value using the carbon intensity value of the incoming biomass fuels and the electrical or heating efficiency of the installation – Section 2.4.5.4 describes the GHG savings calculation.</p>
11	<p>If plant came into operation after 1 January 2021, whether default or actual values for GHG emission savings were used</p> <p>See Section 2.4.5 for an explanation of what default and actual values are.</p> <p>Where disaggregated default values are combined with actual values, the Participant should report 'actual' values in the statement of compliance.</p>
12	<p>Whether support has been provided to produce the consignment and, if so, the type of support system</p> <p>Support cannot be granted for electricity, heating and cooling or fuels where the biomass fuel has already been granted support already under another support scheme or renewable energy obligation in Ireland or elsewhere.</p>

The Regulations require that all the sustainability and GHG emissions savings data are retained by the Participant in the support scheme or renewable energy obligation for at least 3 years and made available to SEAI upon request.

2.4 Sustainability & GHG emissions savings criteria

2.4.1 Overview

This section provides Participants and companies operating in the supply chain with an overview of the sustainability criteria for agricultural and forest biomass, and the GHG emissions savings criteria within an Irish context. This section provides additional context and elaboration on the sustainability and GHG emissions savings criteria of biomass fuels sourced and used in Ireland, according to the RED II criteria. This section is aimed to be of value to stakeholders involved in the sustainability certification of biomass fuels in Ireland.

The **sustainability criteria** are detailed in Schedule 3 of SI 350. It distinguishes between agricultural biomass and forest biomass. For agricultural biomass (Section 2.4.2), there are soil quality, carbon stock and

biodiversity requirements; for forest biomass (Section 2.4.3), there are requirements for national laws or management systems that maintain sustainable production and criteria for land-use, land-use change and forestry (LULUCF).

The **GHG emission savings** thresholds are also specified in Schedule 3 of SI 350. The methodology for calculating GHG emissions is provided in Annex VI of RED II. Section 2.4.5 provides a summary of the methodology and explains where, under certain circumstances, Participants may be required to carry out part of the calculation.

2.4.2 Agricultural Biomass

Compliance with the sustainability criteria for agricultural biomass is demonstrated by naming the voluntary or national scheme under which the biomass fuel is certified – the Procedure does not require further information to be submitted in the forms.

The purpose of providing the following description of the sustainability criteria for agricultural biomass is to explain to Participants what the criteria are, and to assist companies that are Voluntary Scheme certified (or wish to become certified) identify where supporting information may be sourced for agricultural biomass cultivated in Ireland. The evidence required by a Voluntary Scheme to demonstrate that the biomass fuel and the feedstocks meet the sustainability criteria will be specified in the Voluntary Scheme documentation.

The sustainability of agricultural biomass is assessed based on three distinct elements:

- Soil quality and carbon (SI 350 Schedule 3.1 & RED II Article 29.2)
- Biodiversity (SI 350 Schedule 3.2 & RED II Article 29.3)
- Carbon stock and peatlands (SI 350 Schedule 3.3 & 3.4, and RED II Article 29.4 & 29.5)

2.4.2.1 Soil quality & carbon

The **soil quality and carbon** criteria do not allow biomass fuels produced from waste and residues derived from agricultural land (excluding forestry) to be produced on land where the operators or national authorities do not have monitoring or management plans in place to address the impacts on soil quality and soil carbon. Soil carbon is considered to be the soil organic content and soil quality is '*the soil's ability to provide ecosystem and social services through its capacities to perform its functions under changing conditions*'⁷

To adhere to the soil quality and carbon requirements, there needs to be a relevant set of essential soil management and monitoring practices applied to promote soil carbon sequestration and soil quality. The practices may be applied at a national level or by the economic operator. Annex VI of Implementing Regulation 2022/996 provides examples of essential management and monitoring practices that promote and monitor soil carbon sequestration and soil quality.

2.4.2.2 Biodiversity

The **biodiversity** criteria do not allow biomass fuels to be made from raw material obtained from land that had a high biodiversity value from January 2008. This includes:

- primary forests and other wooded land, namely forest and other wooded land of native species where there is no clearly visible indication of human activity, and the ecological processes are not significantly

⁷ JRC (2010) Agri-environmental soil quality indicator in the European Union.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC57594>

disturbed;

- highly biodiverse forest and other wooded land which is species-rich and not degraded, or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;
- areas designated as Special Areas of Conservation and Special Protection Areas; and
- highly biodiverse grasslands

2.4.2.3 Carbon stock & peatlands

The **carbon stock and peatlands** criteria do not permit biomass fuels to be made from raw material obtained from land with high-carbon stock. Carbon stock refers to the carbon that is trapped in the biomass above and below the ground and in the soil itself. This includes land that had one of the following statuses in January 2008:

- wetlands
- continuously forested areas
- land spanning more than 1 hectare with trees higher than 5 meters and a canopy of between 10% and 30%
- peatland

2.4.2.4 Irish laws

In assessing Ireland's suite of legislation, SEAI previously identified several items of existing legislation that could be used to demonstrate that agricultural biomass cultivated in Ireland meets the sustainability criteria for agricultural biomass (see Section 3 and Appendix 2 of *Sustainability Criteria Options and Impacts for Irish Resources*⁸).

In summary, the SEAI report concluded that, in general, the RED II sustainability criteria for agricultural biomass are provided for in existing legislation, which includes:

- The Forestry Act 2014 and Forestry Regulations 2017
- The Birds and Natural Habitats Regulations 2011 to 2021
- The Planning and Development Regulations 2001 to 2023
- The Wildlife (Amendment) Act 2000

In addition to the legislation, there are other relevant guidelines and schemes. As part of the Common Agricultural Policy, there are several different payment schemes for farmers in Ireland. To avail of funding under the Basic Payments Scheme (the most common) and other area based schemes⁹, farmers must satisfy the requirements of Cross Compliance as a condition of payment. Cross compliance consists of thirteen Statutory Management Requirements (SMRs) and seven Good Agricultural and Environmental Condition (GAEC) standards. The Department of Agriculture, Food and the Marine, as the EU Accredited Paying Agency for the CAP, carries out inspections annually to ensure the Cross Compliance requirements are satisfied.

⁸ <https://www.seai.ie/publications/Sustainability-Criteria-Options-and-Impacts-for-Irish-Bioenergy-Resources.pdf>

⁹ Including the Greening Payment, the Young Farmers Scheme, the Areas of Natural Constraints Scheme (ANC) including Islands, the Green, Low Carbon, Agri-Environment Scheme (GLAS), the Agri-Environment Options Scheme (AEOS), the Organic Farming Scheme and the Beef Data and Genomics Programme.

Two of the SMRs relevant to the sustainability criteria are:

- SMR 2 Conservation of Wild Birds; and
- SMR 3 Conservation of Natural and of Wild Flora and Fauna.

These are also covered by the provisions of the Birds and Natural Habitats Regulations. While SMR 1 may also be relevant for soil management, the remaining SMRs are not relevant to the sustainability criteria (they deal with public health, plant health, animal health and animal welfare).

The GAECs deal with water protection, water irrigation, groundwater protection, minimum soil cover, soil erosion, organic soil matter (soil quality), and retention of landscape features. Under GAEC, designated National Heritage Areas, Special Areas of Conservation, Special Protection Areas and other habitats protected under EU or national legislation may not be damaged or removed.

2.4.2.5 Meeting the criteria

As noted previously, the evidence required by a Voluntary Scheme to demonstrate that the biomass fuel and the feedstocks meet the sustainability criteria will be specified in the Voluntary Scheme documentation. Notwithstanding this, the items of legislation set out in the previous sub-section and the supporting regulatory framework can be used to assist companies demonstrate, under Voluntary Schemes, that the agricultural biomass cultivated in Ireland meets the criteria.

Table 4 summarises the relevant laws and those that address the requirements for each of the agricultural criteria under Forestry (The Forestry Act 2014 and Forestry Regulations 2017), Birds and Habitats (The Birds and Natural Habitats Regulations 2011 to 2021), P&D Regulations (the Planning and Development Regulations 2001 to 2023), Wildlife (the Wildlife (amendment) Act 2000) and Cross Compliance (under the common agricultural policy).

Table 4: Relevant Irish Laws and requirements for Irish Agricultural Biomass

Criteria	Relevance under SI 350 & REDII	Forestry	Birds & Habitats	P&D Regs	Wildlife	Cross Compliance	Relevant Irish legislation
Soil quality & carbon (Biomass fuels produced from waste and residues derived from agricultural land (excluding forestry) are produced on land where the operators or national authorities have monitoring or management plans in place to address the impacts on soil quality and soil carbon.)							
Soil quality	Schedule 3.1 & Article 29.2	x	x	x	x	✓	Under cross compliance, there are seven Good Agricultural and Environmental Condition (GAEC) standards. GAEC 4, 5 and 6 are the most relevant. GAEC 4 and 5 deal with the protection of soil from erosion by ensuring minimum soil cover and adopting appropriate land management practices. GAEC 6 deals with soil organic matter. The Soil Health Law (SHL), once implemented, will also regulate soil quality and soil carbon across the EU. Details on the extent to its powers are to be confirmed.
Soil carbon		x	x	x	x	✓	
High biodiversity value (Biomass fuels cannot be made from raw material obtained from land that had a high biodiversity value from January 2008.)							
Primary forest	Schedule 3.2 (a) & Article 29.3 (a)	✓	✓ Note 1	-	✓ Note 3	x	Section 17 (1) of the Forestry Act requires an application to the Minister for Agriculture, Food and the Marine for a licence to fell trees, unless the trees are exempt. The Forest Service is the competent authority responsible for assessing applications for felling licences. Forestry of high biodiverse value or native forests are typically designated as a European Site ¹⁰ or a Natural Heritage Area (NHA) ¹¹ . The Forest Service can only approve applications for felling licences after it has ascertained that the project will not significantly affect the integrity of European Sites or NHA. Similarly, the Wildlife Act

¹⁰ 'European Sites' are Special Areas of Conservation (SAC), Special Protection Areas (SPA) and sites of community importance.

¹¹ NHAs are areas that are considered important for the habitats present or which holds species of plants and animals whose habitat needs protection.

Criteria	Relevance under SI 350 & REDII	Forestry	Birds & Habitats	P&D Regs	Wildlife	Cross Compliance	Relevant Irish legislation
							prohibits any works that are liable to destroy or to significantly alter, damage or interfere with a NHA, such as the production of agricultural biomass.
Highly biodiverse forest	Schedule 3.2 (b) & Article 29.3 (b)	✓	✓ Note 1	✗	✓ Note 3	✗	As above.
Nature protection area	Schedule 3.2 (c) & Article 29.3 (c)	✓	✓	✓ Note 1	✓	✓	<p>As above, and under Section 28(1) of the Birds and Natural Habitats Regulations any activities with the potential for adverse or significant effects on a European Site (this includes SACs and SPAs), such as the production of agricultural biomass, cannot be carried out unless consent has been given by the Minister. Where consent is requested, it will only be given where it can be demonstrated that the activity will not interfere with the protection of the environment (termed <i>nature protection purposes</i> in the Regulations). The National Parks and Wildlife Service (NPWS) is the competent authority for enforcement of the Regulations.</p> <p>Section 19 of the Wildlife Act prohibits carrying out of any works on a NHA which are liable to destroy or to significantly alter, damage or interfere with the features unless the Minister has been informed of the works and has given his consent.</p> <p>Under cross compliance, two of the relevant Statutory Management Requirements are SMR 2 (Conservation of Wild Birds), and SMR 3 (Conservation of Natural and of Wild Flora and Fauna).</p>
Highly biodiverse grassland	Schedule 3.2 (d) & Article 29.3 (d)	✗	✓ Note 2	✗	✓ Note 3	✗	See above – Section 28 (1) the Birds and Natural Habitats Regulations and Section 19 of the Wildlife Act.
High carbon stock (Biomass fuels cannot be to be made from raw material obtained from land with high-carbon stock, i.e. land that was wetland,							

Criteria	Relevance under SI 350 & REDII	Forestry	Birds & Habitats	P&D Regs	Wildlife	Cross Compliance	Relevant Irish legislation
continuously forested, land spanning more than 1 hectare with trees higher than 5m and a canopy of between 10% and 30%, or peatland in 2008.)							
Wetland	Schedule 3.3 (a) & Article 29.4 (a)	x	✓ Note 1	✓ Note 1, Note 3	✓ Note 3	x	See above – Section 28 (1) the Birds and Natural Habitats Regulations and Section 19 of the Wildlife Act. Also, sites designated as European Sites cover, <i>inter alia</i> , wetlands and peatlands. The Planning and Development Regulations (Part 3 of Schedule 2) require that an application for planning permission be made for proposals to drain or reclaim wetland (including peatlands) where the area impacted by the works exceed 0.1 ha. An Environmental Impact Statement is mandatory for wetlands that are larger than 2 ha and where an area to be deforested is greater than 10 ha of natural woodlands or 70 ha of conifer forest. The competent authority for assessing applications is the Local Authority (i.e. the City or County Council)
Forested area	Schedule 3.3 (b) & (c), & Article 29.4 (b) & (c)	✓	✓ Note 1	x	✓ Note 3	x	See above – Section 17 (1) of the Forestry Act, Section 28 (1) the Birds and Natural Habitats Regulations and Section 19 of the Wildlife Act.
Peatland	Schedule 3.4 & Article 29.5	x	✓ Note 1	✓ Note 1, Note 3	✓ Note 3	x	See above - Section 28 (1) the Birds and Natural Habitats Regulations, Section 19 of the Wildlife Act, and Planning and Development Regulations (Part 3 of Schedule 2).
<p><u>Note 1:</u> Areas designated as European Sites are afforded protection. <u>Note 2:</u> Grasslands in areas designated as European Sites are afforded protection in accordance with Regulation 1307/2014¹². <u>Note 3:</u> Areas designated as Natural Heritage Area (NHA) / proposed NHA are afforded protection.</p>							

¹² EC Regulation on defining the criteria and geographic ranges of highly biodiverse grassland for the purposes of Article 7b(3)(c) of Directive 98/70/EC of petrol and diesel fuels and Article 17(3)(c) of Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources.

The European Commission also commissioned a study (REDIIBIO) to assist with preparing guidance for implementing the sustainability criteria of RED II. The study report¹³ contains thirty-two 'country sheets' which provide an assessment of each Member State's current national and sub-national legislative frameworks and whether they meet the sustainability criteria for forest biomass. While it was carried out for forest biomass (see Section 2.4.3), it also provides a useful resource for establishing the sustainability of Irish agricultural biomass.

In addition, the European Commission has provided guidance¹⁴ to Voluntary Schemes on highly biodiverse grasslands and has also adopted a Regulation (1307/2014)¹⁵ defining the criteria and geographic ranges of highly biodiverse grassland, which applied from 1st October 2015.

2.4.3 Forest Biomass

Compliance with the sustainability criteria for forestry biomass is demonstrated by naming the voluntary or national scheme under which the biomass fuel is certified – the Procedure does not require further information to be submitted in the annual application.

As with the guidance for agricultural biomass, the following description of the sustainability criteria for forest biomass is to explain to Participants what the criteria are, and to assist companies that are Voluntary Scheme certified identify (or wish to become certified) where supporting information may be sourced for forest biomass cultivated in Ireland.

The sustainability of forest biomass is assessed based on the following elements:

- Sustainable production criteria (SI 350 Schedule 3.5 & RED II Article 29.6)
- LULUCF criteria (SI 350 Schedule 3.6 & RED II Article 29.7)
- Demonstrating compliance with the above criteria (Implementing Regulation (EU) 2022/2448)

2.4.3.1 Implementing Regulation 2022/2448, Risk-based assessment:

Additional guidance on how operators can demonstrate compliance with the sustainable production and LULUCF criteria for forestry biomass is provided in **Implementing Regulation (EU) 2022/2448**. Compliance with the Regulation may be demonstrated via national or Voluntary Schemes. Currently, there is no national scheme to demonstrate this in Ireland, so compliance will need to be demonstrated by certification to a Voluntary Scheme.

Under Implementing Regulation 2022/2448, economic operators should carry out a risk-based assessment to minimise the risk of using forest biomass that is not compliant with the sustainable production and harvesting criteria. In the first instance, this involves assessing whether national or subnational legislation exist for the area where the biomass is produced, which ensures there is a low risk that the criteria are not met (Level A Risk Assessment). This risk assessment also needs to assess where there are sufficient measures around enforcement and monitoring of the legislation. Each Voluntary Scheme will define what national level risk assessments it will recognise. Typically, the risk assessment needs to have been carried out by the Commission, an approved Voluntary Scheme, or national government, although some schemes will also

¹³ 'Technical assistance for the preparation of guidance for the implementation of the new bioenergy sustainability criteria set out in the revised Renewable Energy Directive', <https://op.europa.eu/en/publication-detail/-/publication/1fe27161-abbb-11eb-927e-01aa75ed71a1/language-en>

¹⁴ [Letter to the voluntary schemes with guidance how to verify protection of highly biodiverse grasslands \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_351_R_0002)

¹⁵ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_351_R_0002

recognise national level risk assessments carried out by qualified organisations that have an expert knowledge of forestry in the region. Ireland has not yet created a national risk assessment for economic operators, but this may change in the future.

For forest biomass sourced from outside Ireland, economic operators need to take further steps to ensure compliance with the criteria and ensure that all biomass is certified under approved Voluntary Schemes.

Where no suitable national level risk assessment is available, or the national risk assessment has identified that there is a specified risk that one or more of the sustainability criteria is not met, then operators have to perform a specific risk assessment around the sourcing area.

2.4.3.2 Sustainable production criteria

The **sustainable production criteria** stipulates that the country in which forest biomass was harvested should have national or sub-national laws (on forest biomass production and harvesting sustainability criteria applicable to the harvest area), as well as monitoring and enforcement systems in place (Schedule 3.5(a)). The purpose of these requirements is to ensure:

1. the legality of harvesting operations;
2. forest regeneration of harvested areas;
3. areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected;
4. harvesting is carried out considering maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and
5. harvesting maintains or improves the long-term production capacity of the forest.

Economic operators should assess whether there are monitoring and enforcement systems in place and ensure that there is sufficient enforcement of the relevant national or sub-national laws. This assessment should be based on legal assessments and reports prepared by the European Commission, international, national governmental organisations, or scientific forest expert organisations.

If there is no evidence of compliance at the national level with one or more of the criteria listed above, the forest biomass should be considered high-risk. Economic operators will then need to undertake a risk-based assessment to ensure that management systems are in place at the forest sourcing area level (Schedule 3.5(b)). In such cases, economic operators should provide more detailed evidence of the sustainability of forest biomass production at the forest sourcing area level to ensure compliance with Schedule 3.5(b). The forest sourcing area level is the geographically defined area from which the forest biomass feedstock is sourced, from which reliable and independent information is available, and where conditions are sufficiently homogeneous to evaluate the risk of the sustainability and legality characteristics of the forest biomass¹⁶.

Information provided by economic operators should be transparent, accurate, reliable, and protected against fraud. Further detail on the evidence required can be found in Article 4 of 2022/2448¹⁷.

2.4.3.3 Land Use, Land Use Change and Forestry (LULUCF) criteria

In addition to the requirements to minimise the risk of unsustainable forest biomass, certain LULUCF requirements must also be addressed at a country level (Schedule 3.6(a)). For biomass fuels produced from

¹⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R2448>

¹⁷ [L_2022320EN.01000401.xml](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:L_2022320EN.01000401.xml) (europa.eu)

forest biomass, the country of origin of the biomass must meet the following LULUCF requirements:

1. It must be a party to or have ratified the Paris Agreement;
2. **and**, have submitted a Nationally Determined Contribution (NDC) to the UNFCCC or have laws in place (in accordance with the Paris Agreement) to conserve and enhance carbon stocks and sinks;
3. **or**, have a national system for reporting GHG emissions and removals from land use including forestry and agriculture.

If the above are not available for the country of origin, management systems at the forest sourcing area level will need to be in place to ensure the carbon stocks and sinks levels in the forest are maintained for the long term (Schedule 3.6(b)). Economic operators should provide evidence of the existence of management systems to achieve compliance and to ensure that both forest carbon stocks and sinks levels are maintained or strengthened in the long term to support LULUCF criteria.

As a minimum, these systems should include information from forward looking planning and periodic monitoring of the development of the forest carbon stocks and sinks in the forest sourcing area level to ensure compliance with Schedule 3.6(b). For example, operators can provide information covering the average forest carbon stocks and sinks in a historic period or describe the expected forest management practices in a sourcing area over a 30-year period. Information provided by economic operators should be transparent, accurate, reliable, and protected against fraud. Further detail on the evidence required can be found in Article 6 of 2022/2448.

2.4.3.4 Irish laws

In assessing Ireland's suite of legislation, SEAI previously identified several items of existing legislation that could be used to demonstrate that forestry biomass cultivated in Ireland meets the sustainability criteria for forestry biomass (see Section 3 and Appendix 2 of *Sustainability Criteria Options and Impacts for Irish Resources*¹⁸).

The key pieces of legislation include the Forestry Act (2014) and the Forestry Regulations (2017), as amended, as well as the Birds and Habitats Directives, which address the requirements for each of the sustainable production criteria for Schedule 3.5(a) in SI 350. These include provisions for permits, forest regeneration, nature protection areas, soil quality and biodiversity, and unsustainable production. The LULUCF criteria under Schedule 3.6(b) is provided for by Ireland's ratification to the Paris Agreement, the EU's submitted nationally determined contributions (NDC) targets, and the reporting of Ireland's GHG emissions and removals. As a result, all Irish sourced forestry biomass complies with Schedule 3.5(a) and 3.6(a).

Table 5 summarises the relevant legislation – the Forestry Act, the Forestry Regulations, the Birds and Natural Habitats Regulation – for compliance with Schedule 3.5(a). Table 6 details how Ireland complies with Schedule 3.6(a). As noted previously, the evidence required by a Voluntary Scheme to demonstrate that the biomass fuel and the feedstocks meet the sustainability criteria will be specified in the Voluntary Scheme documentation. Notwithstanding this, the items of legislation set out below can be used to assist companies demonstrate, under Voluntary Schemes, that the forestry biomass cultivated in Ireland meets the criteria.

¹⁸ <https://www.seai.ie/publications/Sustainability-Criteria-Options-and-Impacts-for-Irish-Bioenergy-Resources.pdf>

Table 5: Relevant Irish Laws and requirements for Irish Forestry Biomass – sustainable production

Criteria	Relevance under SI 350 & REDII	Forestry Act 2014	Forestry Regulations 2017	Birds & Habitats Directive	Relevant Irish legislation
Sustainable production criteria (national level)					
Legal permit for harvesting operations	Schedule 3.5 (a) (i) & Article 29.6 (a) (i)	✓	✓	×	The Forestry Act 2014 (Section 17 (1)) and the Forestry Regulations 2017 (and as amended in 2020), require a person to apply to the Forest Service for a licence to fell trees, unless the trees are exempt (under Section 19). The Forestry Regulation 2020 amends previous processes and procedures dealing with felling licensing.
Regeneration	Schedule 3.5 (a) (ii) & Article 29.6 (a) (ii)	✓	×	×	The Forestry Act (Section 17 (4) (b)) allows the Minister to require the replanting of trees. According to the Felling and Reforestation Policy, permanent removal of trees where a felling licence is required may only be considered under exceptional circumstances (i.e., typically forest regeneration must occur). Even where permanent removal of a forest is permitted, it may be necessary to afforest an equivalent area elsewhere.
Protection of Nature Protection Areas	Schedule 3.5 (a) (iii) & Article 29.6 (a) (iii)	✓	✓	✓	The Forestry Regulations set out, in further detail, the measures to be taken for EIAs and Appropriate Assessments (for European Sites). Additionally, the Birds and Habitats Directives requires specific protections of habitats and species listed within the Directives, mandating the protection of nature protection areas and European sites (Natura 2000 sites, and SPAs/SACs/SSSIs, etc), as well as wider biodiversity, as noted below.
Soil quality	Schedule 3.5 (a) (iv) & Article 29.6 (a) (iv)	✓	✓	×	Soil quality and biodiversity are covered for under Section 11 of the Forestry Act, and at various sections and schedules of the Forestry Regulations. Biodiversity is covered under the Birds and Habitats Directive, of which the main objective is to protect it. Further, under the conditions of a felling licence, the licensee is required to satisfy a range of good forest practise standards published by the Forest Service. These include

Criteria	Relevance under SI 350 & REDII	Forestry Act 2014	Forestry Regulations 2017	Birds & Habitats Directive	Relevant Irish legislation
Biodiversity		✓	✓	✓	<p>the following points that are related to minimising the impact on soil quality and biodiversity.</p> <ol style="list-style-type: none"> 1. Forest Harvesting and the Environment Guidelines which address, <i>inter alia</i>: <ol style="list-style-type: none"> a. soil conservation; b. the protection of water quality, archaeological sites, biodiversity, and the visual landscape; and c. the maintenance of forest health and productivity. 2. Forest Biodiversity Guidelines which set out measures based on the principles of sustainable forest management and best available scientific information.
Long term sustainable production	Schedule 3.5 (a) (v) & Article 29.6 (a) (v)	✓	x	x	The Forestry Act aims to 'to provide for the development and promotion of forestry in a manner that maximises the economic, environmental and social value of forests within the principles of sustainable forest management' and 'sustainable yield of forest goods and services.'

Table 6: Relevant Irish Laws and requirements for Irish Forestry Biomass - LULUCF

LULUCF Criteria (national level)		
Is party to, or has ratified, the Paris Agreement	Schedule 3.6 (a) & Article 29.7 (a)	Ireland has ratified the Paris Agreement.
and Submitted NDC or laws in place to conserve and enhance carbon stocks and sinks	Schedule 3.6 (a) (i) & Article 29.7 (a) (i)	The EU submitted its Nationally Determined Contribution (NDC) target in 2020 which commits the EU and its 27 Member States, to a binding target that commits to reducing emissions by at least 55% below 1990 levels by 2030 (including LULUCF).
or has national system for reporting GHG emissions and removals from AFOLU sectors	Schedule 3.6 (a) (ii) & Article 29.7 (a) (ii)	The EPA compiles Ireland's national GHG inventory on an annual basis. This inventory is submitted to the European Commission and UNFCCC each year by 15 January and 15 April respectively. The inventory specifically covers the national reporting on GHG removals and emissions from all sectors, including forestry (under LULUCF).

2.4.3.5 Forestry policy and management in Ireland

The Department of Agriculture, Forestry, and the Marine (DAFM)'s policy is to expand forest cover in Ireland from its current level of approximately 11.6% to 18%, helping to support and ensuring the long-term sustainable production of forest biomass in Ireland¹⁹. The policy and the strategic plan for forestry in Ireland are set out several documents produced by DAFM and the Forest Service²⁰. The plan is supported by the Forestry Programme, which is providing funding of €1.3 billion between 2023 to 2027 for projects to promote the development of forestry in Ireland in line with Ireland's Forest Policy including afforestation, road construction, woodland improvement, woodland reconstitution, and native woodland conservation²¹.

The Forest Service ensures compatibility with the principals of sustainable forest management by setting felling, preservation and reforestation conditions and carrying out compliance checks to ensure compatibility with the principles of sustainable forest management and the protection of the environment²². Several standards and guidelines have been published by the Forest Service covering all aspects of forestry; examples of these include:

1. The Irish National Forestry Standard (INFS)
2. The Code of Best Forest Practice
3. The Suite of Environmental Guidelines:
 - Forestry and water quality guidelines;
 - Forestry and the landscape guidelines; Forestry and archaeology guidelines;
 - Forest biodiversity guidelines;
 - Forest harvesting and environmental guidelines; and
 - Forest protection guidelines.
4. Forestry and Aerial Fertilisation

2.4.4 Mass balance

2.4.4.1 Introduction

Every part of a supply chain must provide evidence of compliance with the sustainability and GHG emissions saving criteria. To ensure that all the biomass fuel properties and related sustainability characteristics are transmitted through the supply chain to the fuel supplier, adequate *traceability* and *chain of custody* measures are required.

The method by which a connection is made between information or claims concerning raw materials (feedstocks) or intermediate products and claims concerning final biomass fuels is known as the *chain of custody*. Regulations 14 (2) to (4) of SI 350 specifies that the mass balance method must be used in establishing a chain of custody and sets out the requirements of the mass balance system (mirroring those contained in Article 30 of RED II).

¹⁹ [gov.ie](http://www.gov.ie) - Forest Strategy Implementation Plan including the Forestry Programme 2023-2027 (www.gov.ie)

²⁰ For example: Forests, products and people: Ireland's forest policy – a renewed vision, DAFM, 2014 (available at <https://assets.gov.ie/118982/818a0e65-c5ae-4902-a720-17ef4d72b9e1.pdf>) and Standards for Felling & Reforestation, DAFM, 2019 (available at <https://assets.gov.ie/240285/ea3862d4-e2a4-4475-8333-40b4306e0633.pdf>)

²¹ [gov.ie](http://www.gov.ie) - European Commission approves afforestation measures in Forestry Programme 2023 - 2027 (www.gov.ie)

²² [Sustainability-Criteria-Options-and-Impacts-for-Irish-Bioenergy-Resources.pdf](https://seai.ie) (seai.ie)

2.4.4.2 Voluntary Schemes

With SEAI's Procedure relying on Voluntary Scheme documentation to demonstrate compliance with the sustainability and GHG emissions savings criteria, there is consequently a reliance on the Voluntary Scheme standards, which include rules and requirements for operating a mass balance system. These systems will be audited by certification bodies acting on behalf of Voluntary Schemes. Thus, providing evidence that a consignment is Voluntary Scheme certified is sufficient confirmation that the mass balance rules have been applied.

Notwithstanding the reliance on Voluntary Schemes, this section provides supplementary guidance for those companies that are certified under Voluntary Schemes. It also supports those operators that place biomass fuel on the market in Ireland and that rely on suppliers that are Voluntary Scheme certified, but are not themselves Voluntary Scheme certified.

2.4.4.3 Implementing Regulation 2022/996

Implementing Regulation 2022/996 sets out further detailed implementing rules, including adequate standards for reliability, transparency and independent auditing that are required to be implemented by Voluntary Schemes. Article 19 of the Implementing Regulation provides the rules for implementing the mass balance system.

In summary, the mass balance system aims to reduce the administrative burden by allowing feedstocks and fuels with differing sustainability characteristics to be mixed, and by allowing reassignment of the sustainability characteristics in a flexible manner to consignments withdrawn from such a mixture.

In order to ensure transparency, 'mixing' under the mass balance system is possible if, for example, feedstocks belong to the same 'product group'. A product group²³ can comprise, for instance, different types of non-food cellulosic material with similar physical and chemical characteristics, heating values and/or conversion factors. The following sets out what mixed means and where it is permissible²⁴:

- (a) raw material or renewable fuels are part of a mixture if they are mixed in a container, at a processing or logistical facility, or at a transmission and distribution infrastructure or site;
- (b) different raw materials shall only be considered to be part of a mixture if they belong to the same product group, except where the raw material is mixed for the purpose of further processing;
- (c) raw materials or fuels shall only be considered to be part of a mixture if they are physically mixed, unless they are physically identical or belong to the same product group. Where raw materials or fuels are physically identical or belong to the same product group, they must be stored in the same interconnected infrastructure, processing or logistical facility, transmission and distribution infrastructure or site;
- (d) fuels that are introduced into a logistical facility or a transmission and distribution infrastructure such as the gas grid or a pipeline network for liquid fuels, or stored in LNG or other storage facilities shall only be considered to be part of a mixture pursuant to point (c) where that infrastructure is interconnected.

For gaseous fuels, the EU interconnected grid is considered as a single mass balancing system. Gaseous fuels

²³ Article 2, IR 2022/996: 'product group' means raw materials, biofuels, bioliquids, non-gaseous biomass fuels with similar physical and chemical characteristics and similar heating values or gaseous biomass fuels, and LNG with similar chemical characteristics that all are subject to the same rules set out in Articles 7, 26 and 27 of Directive (EU) 2018/2001 for determining the contribution of biofuels, bioliquids and biomass fuels towards achieving the targets for renewable energy.

²⁴ Adapted from Article 19 of Commission Implementing Regulation (EU) 2022/996, Article 19.

produced and consumed off-grid or through isolated local distribution networks should have separate mass balancing systems.

Information about the sustainability and GHG emissions characteristics and sizes of consignments must remain assigned to the mixture. Thus, the sustainability and GHG emission characteristics of a consignment of feedstock or fuel shall be considered as fixed. The sum of all consignments withdrawn from the mixture shall have the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture. Consequently, individual consignments withdrawn from the mixture may have different sets of sustainability and GHG emission characteristics.

Separate mass balances need to be maintained for raw materials and fuels that cannot be considered part of the mixture. Note, however, this is not required at production facilities where feedstocks are combined to produce a single fuel type, e.g. biomethane.

Further, precautionary measures are required to ensure the consistency of sustainability claims when fuels are exported to third countries which do not apply the mass balance system. Thus, the mass balance system should also include information on quantities of fuels for which no sustainability characteristics have been determined and deliveries of fuels to uncertified operators shall be taken into account in the mass balance system.

2.4.5 GHG Emissions Savings

This subsection describes the sources of GHG emissions (section 2.4.5.1), what the GHG emissions savings criteria are (section 2.4.5.2), what 'default' GHG emissions savings are and how they can be used (section 2.4.5.3), and the methodology for calculating 'actual' GHG emissions savings (section 2.4.5.4).

It also highlights that where a Participant is not certified by an approved Voluntary Scheme or national scheme of another Member State, and is relying on actual GHG emission values contained in PoS provided by Voluntary Scheme certified suppliers, the Participant needs to include for the efficiency of the installation and the of combustion emissions (e_u) in the calculation, and have it independently verified.

2.4.5.1 Sources of GHG Emissions

The RED II GHG emissions savings methodology is based on lifecycle GHG emissions. The lifecycle approach includes GHG emissions associated with the entire supply chain (from cultivating, harvesting, processing and transporting the biomass), combustion, and from direct carbon stock changes. The following two illustrations show the key sources of GHG emissions for solid and gaseous biomass (sourced from SEAI report, *Sustainability Criteria Options and Impacts for Bioenergy in Ireland*²⁵).

²⁵ <https://www.seai.ie/technologies/bioenergy/sustainability-criteria-o/>

Figure 2: Key sources of GHG emissions for an illustrative solid biomass pathway

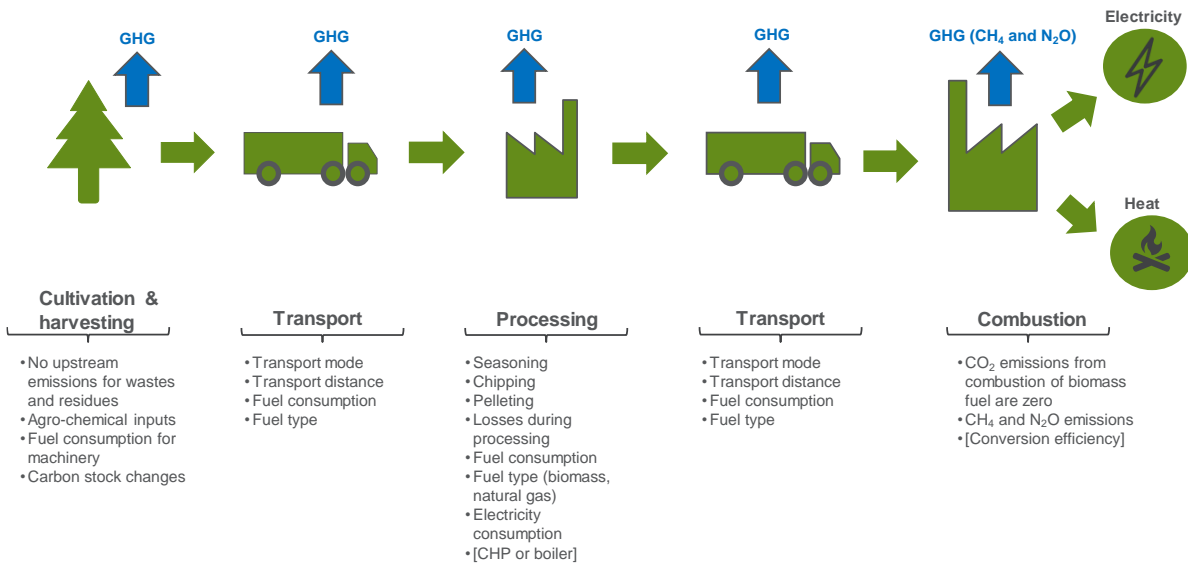
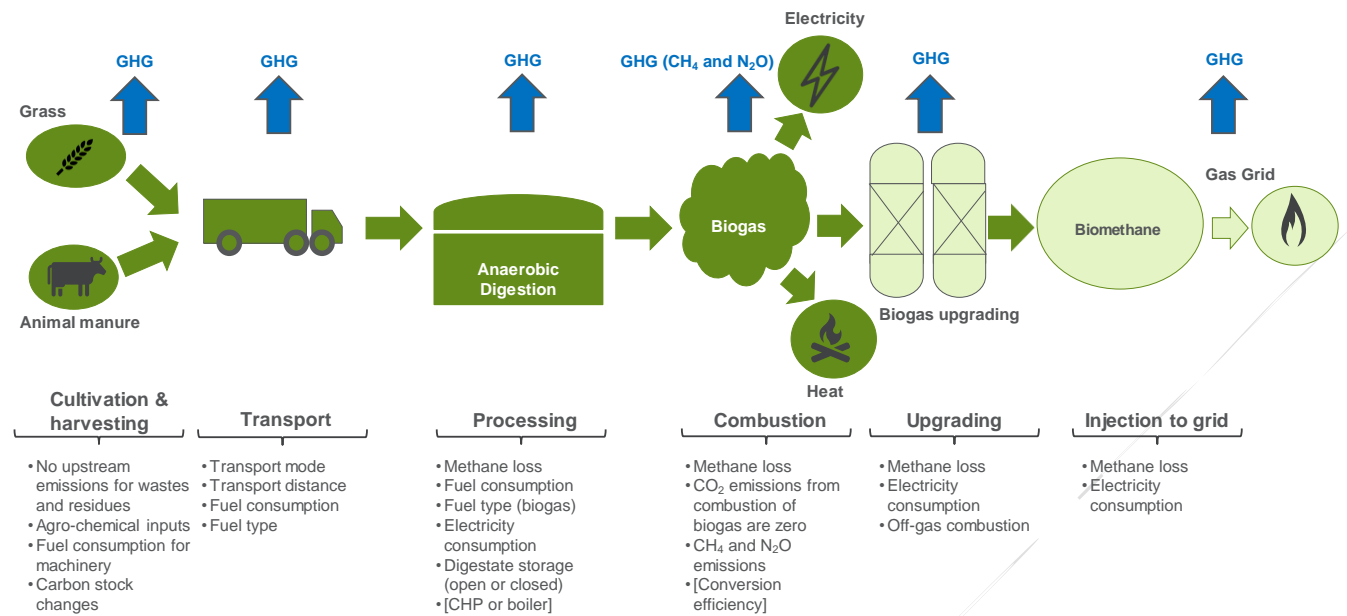


Figure 3: Key sources of GHG emissions for an illustrative gaseous biomass pathway



The GHG emissions from **cultivation** and **harvesting** can be significant, especially if large volumes of synthetic fertilisers are used (nitrogen fertilisers, in particular, because their application results in N₂O emissions from soil). For feedstocks that are wastes and residues, GHG accounting starts at the point of collection and, therefore, these supply chains can have very low emissions, because there are no cultivation emissions.

The further the biomass is **transported**, the greater the GHG emissions. Road transport typically has a higher GHG intensity than sea transport on a per km basis. The GHG intensity of rail transport is largely dependent on whether the fuel type is diesel or electricity (and the applicable electricity grid emission factor).

Processing emissions are negligible for chipping biomass. Pelletizing emissions vary across a wide range depending on the fuel type used for drying the biomass and whether a boiler or CHP system is deployed in the pelletizing plant. For example, emissions are low for a biomass CHP, but are significant for a natural gas

boiler. The electricity usage and the applicable electricity grid emission factor also have an impact on the emissions. For biogas, a key consideration is whether the digestate is stored in an open or closed (gas tight) system, since the digestion process continues during the storage period.

The processing emissions for upgrading biogas to biomethane relate to electricity usage and are not significant. A key factor that impacts the GHG emissions is whether the off-gases are vented to atmosphere, or oxidised (flared). If the off-gases are oxidised with a high efficiency of CH₄ conversion, then no CH₄ is released to the atmosphere.

CO₂ **combustion** (fuel in use) emissions from biomass are considered to be zero. However, non-CO₂ combustion emissions (CH₄ and N₂O) need to be taken into account.

2.4.5.2 GHG emissions savings criteria

To meet the GHG emissions savings criteria, biomass fuels are required to achieve at least 70% GHG emissions savings when used to produce electricity, heating and cooling. The criterion applies to installations starting operation from 1st January 2021, and increases to 80% for installations starting operation from 1st January 2026.

As set out previously, GHG emissions are calculated by using a lifecycle approach and the methodology is contained in Annex VI, Part B of RED II. It specifies three options when calculating the GHG emissions savings.

1. Use the **default values** for a specific fuel chain, provided there has been no net carbon emissions from land-use during the cultivation of any feedstocks used (see Section 2.4.5.3);
2. Use the **actual values** for GHG emissions from each stage in the fuel chain (cultivation, processing, transport and distribution) and follow the calculation method (see Section 2.4.5.4);
3. Use a combination of **disaggregated default values** for some stages of the fuel chain, and actual values for the other stages.

2.4.5.3 Default values

Using default values is relatively straight forward, but default values are deliberately conservative and may understate the savings for some fuel chains. The default values are available in RED II Annex VI, Part A and Part B. Table 7 provides a summary of the default values contained in Annex VI for a selection of fuel chains that are likely to apply in Ireland. Also indicated is whether the defaults comply with the minimum GHG saving threshold of 70%.

Green shading in the right-hand column indicates that the pathway will always meet the 70% GHG threshold, if default values are reported, amber shading indicates that the default value meets the GHG threshold under certain conditions (e.g. limits on the transport distance), and red shading indicates that the pathway does not meet the GHG threshold, if default values are reported.

Table 7: Summary of select default value GHG emission savings from Annex VI of RED II

Feedstock	Default value range* (gCO _{2eq} /MJ of biomass fuel)		GHG emission saving range (heat and electricity)**			Compliance with a 70% GHG saving threshold
			Use		%	
Biomass - Chips						
Forest residues	6	27	Heat Elec	60 41	91 87	If transport distance is <10,000 km for heat, or <2,500 km for electricity.
Industry residues	5	25	Heat Elec	63 44	93 90	If transport distance is <10,000 km for heat, or <2,500 km for electricity.
Short rotation coppice (Poplar Fertilised)	9	30	Heat Elec	57 35	87 81	If transport distance is <10,000 km for heat, or <2,500 km for electricity.
Biomass - Pellets						
Forest residues	7	41	heat Elec	40 11	90 86	If process heat and power is provided by a CHP fed on woodchips, or if process heat is provided by woodchip boiler and power is supplied via grid, and transport distance is <10,000 km (heat only).
Sawmill residues	4	27	Heat Elec	61 42	94 91	If process heat and power is provided by a CHP fed on woodchips, or if process heat is provided by woodchip boiler and power is supplied via grid, <u>and</u> transport distance is <10,000 km for electricity.
SRC poplar (Fertilised)	9	43	Heat Elec	37 7	87 81	If process heat and power is provided by a CHP fed on woodchips, and transport distance is <10,000 km.
Straw (agricultural pathway)	10	16	Heat Elec	76 64	85 78	All fuel chains, except if transport distance is >10,000 km for electricity.
Biogas						
Wet manure	-89	10	Elec	85	240	All fuel chains.
Maize	28	59	Elec	10	53	No fuel chains.
Manure/ Maize (80%:20%)	-9	43	Elec	35	114	If closed digestate system is applied.
* Note that the assumed conversion efficiencies are 85% for heat and 25% for electricity.						
** The fossil fuel comparators used to calculate the GHG emission savings are 80 gCO _{2eq} /MJ heat and 183 gCO _{2eq} /MJ electricity						

The methodology for calculating the carbon intensity values and the GHG emissions savings are described in the following sub-section. The default GHG emission savings in RED II are based on end-use conversion efficiencies of 85% for heat and 25% for electricity. The European Commission acknowledges that 25% is conservative and the average efficiency is more likely to be around 30-35% and up to 40% with co-firing (see SWD(2014) 259²⁶). Thus, the default values contained in RED II are conservative.

2.4.5.4 Calculation

The methodology for calculating GHG emissions for the use of biomass fuels is set out in Part B of Annex VI of RED II. At a high level, it comprises two steps. The first is to calculate the GHG emissions from the production and use of biomass fuels before conversion into electricity, heating and cooling. The second step is to calculate the GHG emissions from using the biomass fuels to produce electricity, heating and cooling by taking into account the efficiency of combustion.

The first step requires the application of the following equation:

$$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr}$$

Where:

E	=	total lifecycle emissions from the production of the biomass fuel (<u>before</u> energy conversion into electricity, heating and colling) - expressed in grams of CO ₂ equivalent per MJ of biomass fuel (gCO _{2eq} /MJ)
e _{ec}	=	emissions from the extraction of cultivation of raw material (feedstock)
e _l	=	annualised emissions from carbon stock changes caused by land-use change
e _p	=	emissions from processing (converting the feedstock to a fuel)
e _{td}	=	emissions from transport and distribution
e _u	=	emissions from the fuel in use (combustion)
e _{sca}	=	emission savings from soil carbon accumulation via improved agricultural management
e _{ccs}	=	emission savings from CO₂ capture and geological storage
e _{ccr}	=	emission savings from CO₂ capture and replacement

The equation reflects the lifecycle methodology and includes for all the GHG emissions from the point at which the crop (agricultural or forest) was planted or the waste / residue became a waste / residue. The methodology does not include the emissions associated with manufacturing the machinery and equipment used to convert the feedstock into a biomass fuel.

Where the Participant is producing biogas from different feedstocks, the methodology for calculating the GHG emissions is similar to that set out in the previous paragraph, but the share of each feedstock needs to be taken into account along with other factors, such as emissions from improved agricultural management of the feedstocks. Annex VI of RED II details the methodology.

In the second step, the GHG emissions from combusting the biomass fuel to produce electricity, heating and cooling are calculated by taking into account the efficiency of the installation. GHG emissions from heating or electricity, produced from biomass fuels are expressed in terms of grams of CO₂ equivalent per MJ of final energy commodity (heat or electricity), gCO_{2eq}/MJ.

²⁶ <https://data.consilium.europa.eu/doc/document/ST%2012334%202014%20INIT/EN/pdf>

Installation efficiency & combustion emissions

Note that where a Participant is not certified by an approved Voluntary Scheme or a national scheme of another Member State and is relying on actual GHG emission values contained in PoS provided by Voluntary Scheme certified suppliers, the Participant needs to include for the efficiency of the installation and the of combustion emissions (e_u) in the calculation, and have it independently verified (see Section 3).

For example, in an electricity-only installation with an electrical efficiency of 38% combusting a biomass fuel with a carbon intensity of 10 gCO_{2eq}/MJ, the electricity emits 26 gCO_{2eq} per MJ of electricity produced (10 gCO_{2eq}/MJ ÷ 38%). The same approach is taken for heat installations. Where the installation is a CHP, both the electrical and heat efficiency are included (see RED II, Annex VI, Part B, 1 (d) for further details on the calculation).

In addition to the installation efficiency, emissions from non-CO₂ greenhouse gases (CH₄ and N₂O) also need to be included for in the lifecycle calculation, in the e_u factor. For solid fuels, the non-CO₂ emissions are negligible (<1 gCO_{2eq}/MJ), and there are disaggregated default values provided in the RED II, Annex VI, Part C for various forestry and agricultural pathways – all the default values are either 0.3 or 0.5 gCO_{2eq}/MJ of biomass fuel. For biogas, however, the non-CO₂ combustion emissions are more significant with a disaggregated default value of 12.5 gCO_{2eq}/MJ of biogas.

The fossil fuel comparators used to calculate the **GHG emission savings** are 183 gCO_{2eq}/MJ electricity and 80 gCO_{2eq}/MJ heat (or 124 gCO_{2eq}/MJ heat if a direct physical substitution of coal can be demonstrated). Therefore, if the GHG emissions from the electricity-only installation, including e_u , were 26.5 gCO_{2eq} per MJ of electricity produced, then the GHG emissions savings for electricity produced from the biomass fuel would be 86%: $(183 - 26.5) \div 183$.

Where the Participant is Voluntary Scheme certified, it also needs to calculate the non-CO₂ combustion emissions, but the calculation does not need to be independently verified, because it falls under the remit of the Voluntary Scheme certification.

3 Verification & Auditing

3.1 Overview

This section describes the key responsibilities of the parties involved in the verification and auditing processes for biomass fuels.

- **Guidance Section 3.2** (*Procedure Section 3.1*) summarises the data and information that must be submitted to SEAI, and independently verified and audited, when making an annual submission. It also provides guidance on information that may need to be made available for a Verifier and auditor to review whilst undertaking an assurance engagement.
- **Guidance Section 3.3** (*Procedure Section 3.2*) describes the Independent Verification Report (IVR), and **Section 3.4** (*Procedure Section 3.3*) describes the annual auditor's report.
- **Guidance Section 3.5** (*Procedure Section 3.4*) describes how the verification and auditing activities may be combined, aligning with the Procedure's option for a combined IVR.
- **Guidance Section 3.6** (*Procedure Sections 3.2 to 3.4*) provides guidance on the requirements for independent assurance engagements under ISAE 3000, professional competencies for Independent Verifiers and auditors, and the verification and auditing activities.
- **Guidance Section 3.7** (*Procedure Sections 3.2 to 3.4*) provides guidance on the roles and responsibilities of Independent Verifiers and Participants.

The requirement to submit information to SEAI that is independently verified and audited is set out in Regulations 10 and 12 of SI 350. Records of sustainability criteria related data shall be maintained for each consignment and, as part of the verification, the records, together with the data submitted to SEAI, shall be audited.

It should be noted that while the Procedure and the following sections describe separately the requirements for verification and auditing, these activities may be combined whereby the verification and auditing activities are carried out by a single Verifier and a single IVR is prepared and submitted to SEAI annually.

3.2 Information to be reported annually.

3.2.1 Introduction

There are two categories of information that need to be submitted to SEAI, as set out in Section 2:

1. Information on the installation, under Regulation 6.
2. Sustainability and GHG emissions savings information, under Regulations 10 and 14.

Table 2 in Section 2.2 describes what installation related information is required to be submitted, and Table 3 in Section 2.3 describes the sustainability and GHG emissions savings information. The information is being requested to demonstrate compliance with Regulations 6, 10, 12 and 14, and shall be submitted in SEAI's forms.

While the requirements for verification under Regulation 10 are similar to those for auditing under Regulation 12, they are treated as two separate requirements under the Procedure, albeit they may be combined, to reduce the administrative burden of verification and auditing. There are two options available to Participants on how these activities are carried out.

3.2.1.1 Option 1

Under this option, two reports are required to be submitted to SEAI along with the forms submitted by Participants in their annual submission. It is a requirement of Regulation 10 that the information submitted to SEAI under this Regulation is independently verified, in accordance with the requirements for assurance

engagements, and that an IVR is submitted to SEAI. The requirements for IVRs are detailed in Section 3.3 and the requirements for assurance engagements are detailed in Section 3.6.

Regulation 12 requires that Participants' records of sustainability criteria related data for each consignment of biomass fuels used, and the data submitted to SEAI on an annual basis, are independently audited. The auditing shall be carried out in accordance with requirements for assurance engagements.

These Regulation 12 requirements are similar to those under Regulation 10, but in the case of Regulation 12 there are two items of data that need to be audited:

1. The records of sustainability criteria related data – these are the documents and calculations used to prepare the data reported in the Statement of Compliance (see Section 2.3), which is also the information submitted under Regulation 10.
2. The data submitted to SEAI on an annual basis – this is all that is reported to SEAI annually, which includes the information on the installation (see Section 2.2) and the Statement of Compliance (see Section 2.3), which are both reported in the forms submitted to SEAI annually.

An independent auditor must be appointed by the Participant to audit both items of data. The independent auditor must prepare an annual auditor's report, which is to be submitted by the Participant along with the data submitted by the Participant annually, and the IVR. The requirements for the annual auditor's report are discussed in Section 3.4 and requirements for assurance engagements are detailed in Section 3.6.

3.2.1.2 Option 2

Under this option, both activities (verification and auditing) may be combined and carried out by an Independent Verifier. The IVR and the auditor's report may also be combined and a single IVR may be submitted to cover both verification and auditing requirements. The requirements for a combined IVR are discussed in Section 3.5 This option 2 approach reduces the number of reports required compared to option 1 approach and it may be advantageous for participants in terms of efficiency and simplicity.

3.2.2 Evidence

To ensure that a full chain of custody is in place for biomass fuels, records for both the sustainability and GHG savings data, and the physical biomass fuels, are required to be maintained. This information may need to be made available for a Verifier/auditor to review whilst undertaking an assurance engagement on data submitted to SEAI. The following provides additional guidance regarding acceptable forms for evidence.

1. A proof of sustainability (or equivalent) generated by the scheme must exist for the fuel reported to SEAI. Additional evidence is not required to substantiate the sustainability and GHG emissions savings information included on the proof of sustainability (PoS). However, the claim of compliance with the scheme and the PoS must be legitimate, the recognised version of the scheme must be used, and the quantity of biomass fuel must be reported accurately.
2. A PoS issued under the scheme is the only acceptable form of evidence that the biomass fuel meets the sustainability and GHG savings criteria. Neither membership of a Voluntary Scheme nor an audit of an individual supplier to a scheme's requirements is acceptable.
3. Participants in support schemes or renewable energy obligations should ensure that the PoS includes the necessary information to support the information submitted to SEAI in the forms or in an IVR or annual auditor's report.
4. Each Voluntary Scheme has its own system for tracing registrations and any PoSs issued. Some are numbered and can be cross-checked using an online database. Some have strict rules on the claims

that can be made, such as a requirement for all parties in the chain of custody, including the reporting party, to be registered and certified for a claim to be legitimate. Certificates issued outside of scheme rules are not legitimate and cannot be relied upon.

5. For biomass fuels covered by a recognised national scheme of another Member State, Participants in support schemes or renewable energy obligations should contact SEAI to discuss the evidence that may need to be provided.
6. Physical shipments do not have to contain the same information as the sustainability and GHG savings data under a mass balance system, but a physical quantity must have been transported between the two entities to comply with the rules. This will be more prevalent for biogas where, for example, it may be legitimate to have a physical shipment of biomethane produced from several feedstocks which has sustainability data for just one feedstock.
7. Bills of lading should be available for all biomass fuels that have been shipped into Ireland. Feedstocks produced within Ireland may not have bills of lading, but there should be equivalent transportation documentation that provides evidence of product type, quantity, delivery route and date of delivery. Biomass fuel quantity data from bills of lading need to be consistent with the data submitted to SEAI.
8. Purchases and sales invoices will set out the quantities purchased and sold by exchange partners – this data may be recorded in electronic CRM systems.
9. For companies handling waste materials, waste transfer notes or the movement of animal by-products, appropriate documents should be available. Such suppliers should also be able to provide documentation to prove their status as an 'approved' handler of waste materials.
10. Reporting parties should be able to provide contract documentation that describes the biomass fuel that the supplier was contracted to supply, and which links to the invoices and bill(s) of lading that demonstrate that the specified biomass fuel was supplied.
11. Contract documentation may also set out requirements on the supplier to provide data, results of analytical testing, assurance to a particular standard or access to evidence.
12. On receipt of deliveries, reporting parties may perform tests of the biomass fuel for conformity with required physical and chemical properties.

3.3 Independent Verification Report

Verifiers need to ensure that their IVRs satisfy the requirements of ISAE 3000, which is discussed in Section 3.6.1. Where there are separate verification and auditing activities being carried out by a different Verifier and auditor, the scope of the verification may be limited to the Regulation 10 data (i.e. the data that is required to be reported under Section 2.3 of the Procedure and is detailed in Table 3 of this Guidance). The minimum requirements for assurance reports are set out in ISAE 3000 (paragraph 69)²⁷. In summary, the report should include:

- A title
- An addressee
- A description of the level of assurance and the information being assured
- The applicable criteria and any limitations on conducting the assurance against the criteria
- Who is the 'responsible party' (the Participant), who is the 'evaluator' (SEAI), and the responsibilities of

²⁷ <https://www.iaasb.org/publications/international-standard-assurance-engagements-isa-3000-revised-assurance-engagements-other-audits-or>

both, and the responsibility of the Verifier.

- A statement that the engagement was performed in accordance with ISAE 3000.
- A statement of quality control requirements applied
- A statement of independence
- A summary of the work performed
- The conclusion. In a limited assurance engagement, the conclusion is expressed in a form that conveys whether, based on the procedures performed and evidence obtained, nothing has come to the Verifier's attention to cause the Verifier to believe that the subject matter information is materially misstated.
- A signature of the Verifier
- The date of the report

Section 3.2 of the Procedure sets out additional items to be included in IVRs. To assist Verifiers with preparing and submitting accurate information in the IVR, Table 8 describes each of the additional items of information that need to be included, and provides guidance on how to interpret what is being requested.

Table 8: Interpretation of additional IVR information

No.	Requirement & description
1	Statement that engagement was carried out to <i>limited</i> assurance. Limited assurance is described in Section 3.6.1.
2	A copy of the Table 2 data to be submitted to SEAI in the forms (Statement of Compliance) by the Participant shall be appended to the IVR. This is required to confirm what information was verified and to enable SEAI to cross check that the verified information matches that submitted by the Participant. It is sufficient to include a screen shot of the information to be reported in 'Statement of Compliance' forms (see section 2.3) in the IVR. By including this in the IVR, the Verifier is showing what information was examined.
3	For biogas supplied through the national gas grid, a copy of the Proof of Origin Cancellation Statement from GNI's Renewable Natural Gas Registry corresponding the quantity being claimed. Gas Networks Ireland (GNI) registers and issues certificates to Irish producers that inject renewable gas (biomethane) into the gas network. Each certificate (a Proof of Origin) represents a guarantee that the equivalent amount of renewable gas has been injected into the gas network. Thus, by providing a Proof of Origin cancellation statement, the Participant is demonstrating to SEAI that the biomethane injected to the gas network has not been counted towards other renewable energy obligations (e.g. the RTFO in transport). To obtain a cancellation statement for a Proof of Origin, the owner of the Proof of Origin needs to contact GNI and request it be cancelled.
4	Confirmation that, where a biomass fuel consignment is verified, the Voluntary Scheme is recognised by the European Commission to demonstrate compliance with the particular biomass fuel type, feedstock and geographical location combination. In a limited assurance engagement, a Verifier may not examine the supporting data for all the consignments reported the statement of compliance. It will, however, check the evidence for some consignments. It should also, in some instances, verify that the Voluntary Scheme reported in the statement of compliance is approved by the European Commission for the type of feedstock, the type of fuel, the geographical and the chain of custody coverage of the biomass fuel consignment. These Voluntary Scheme parameters are set out, for each approved scheme,

No.	Requirement & description
	<p>on the European Commission's website: https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en</p>
5	<p>In the event of resubmission of revised data to SEAI by the Participant, a statement within a revised IVR that the Verifier has taken the changes into account in providing a new assurance statement for information that was previously submitted but was changed following review by SEAI.</p>
	<p>The purpose of this requirement is to ensure that any revised data that may be submitted to SEAI is taken into account by the Verifier, and to acknowledge that a revision has been carried out.</p>
6	<p>Where the Participant in the support scheme or renewable energy obligation is <u>not</u> certified by an EU approved Voluntary Scheme or national scheme of another Member State, and is relying on actual GHG emissions savings values, the IVR shall:</p> <ol style="list-style-type: none"> a. state the actions taken by the Independent Verifier to check the correct application of the methodology detailed in Part B of Annex VI of RED II, specifically item 1 (d); b. set out the actions taken by the Independent Verifier to check the inclusion of non-CO₂ GHG emissions (CH₄ and N₂O) in the 'e_u' factor (emissions from the fuel in use); c. set out the actions taken by the Independent Verifier to check the integrity of the mass balance.
	<p>Where the Participant is Voluntary Scheme certified, verifying the correct application of the calculation methodology and the mass balance will fall under the remit the Voluntary Scheme (and its Certification Body).</p> <p>Participants <u>not</u> certified by an approved Voluntary Scheme or national scheme of another Member State that rely on actual GHG emission values contained in PoS provided by Voluntary Scheme certified suppliers need to carry out additional calculations, which are described in section 2.4.5.4. In summary, the Participant will need to include the efficiency of the electricity or heating generation installation in the GHG emissions savings calculation, and the emissions from the fuel in use (e_u). It will also need to apply the rules of the mass balance from the point of delivery to the point of electricity/heat generation.</p> <p>While the additional steps in the GHG emissions savings calculation are not complex, there is a need to ensure they are carried out correctly and thus SEAI has placed this requirement on the Independent Verifier.</p> <p>In relation to the integrity of the mass balance, the Verifier may, on a limited assurance basis, check how the Participant accounts for biomass fuel that is not Voluntary Scheme certified (and thus not considered to be sustainable), how it accounts for fossil fuels, and how it accounts for biomass fuel that may be exported from the installation. The mass balance requirements are outlined in section 2.4.3.5.</p>

3.4 Independent Auditor's Report

Auditors need to ensure that their reports satisfy the requirements of ISAE 3000, which is discussed in Section 3.6.1. The minimum requirements for assurance reports are set out in ISAE 3000 (paragraph 69)²⁸. In summary, the report should include:

- A title
- An addressee
- A description of the level of assurance and the information being assured
- The applicable criteria and any limitations on conducting the assurance against the criteria
- Who is the 'responsible party' (the Participant), who is the 'evaluator' (SEAI), and the responsibilities of both, and the responsibility of the auditor.
- A statement that the engagement was performed in accordance with ISAE 3000.
- A statement of quality control requirements applied
- A statement of independence
- A summary of the work performed
- The conclusion. In a limited assurance engagement, the conclusion is expressed in a form that conveys whether, based on the procedures performed and evidence obtained, nothing has come to the auditor's attention to cause the auditor to believe that the subject matter information is materially misstated.
- A signature of the auditor
- The date of the report

The scope of the annual auditor's report is all the data submitted to SEAI in the forms (i.e. that detailed in Table 2, Section 2.2, and in Table 3, Section 2.3 of this Guidance), and the Participant's records of sustainability criteria related data (Section 3.2.2 details the records that may be available).

Section 3.3 of the Procedure sets out additional items to be included in auditor reports. To assist Auditors with preparing and submitting accurate information in the auditor's report, Table 9 describes the additional items of information that need to be included, and provides guidance on how to interpret what is being requested.

Table 9: Interpretation of additional auditor's report information

No.	Requirement & description
1	<p>The auditor's report shall confirm that the auditor has evaluated the frequency and methodology of sampling and the robustness of the data.</p> <p>Biomass fuels supplied to an installation need to be voluntary or national scheme certified. Consequently, the fuels should have Voluntary Scheme (or national scheme) proofs of sustainability. The audit should confirm this is the case. In the context of a limited assurance engagement, all the data submitted to SEAI may not be examined – a sample of the data may be selected and verified. The audit should evaluate how robust the data submitted is.</p>
2	<p>The auditor's report shall confirm that the auditor has verified that the systems used by the Participant in the support scheme or renewable energy obligation are accurate, reliable and protected against fraud, including verification ensuring that materials are not intentionally modified or discarded so that the consignment or part thereof could become a waste or residue.</p>

²⁸ <https://www.iaasb.org/publications/international-standard-assurance-engagements-isa-3000-revised-assurance-engagements-other-audits-or>

No.	Requirement & description
	It is a requirement of Regulation 12 of SI 350 that the above activities are carried out, which are in addition to activities carried out by Certification Bodies under a Voluntary Scheme. Regulation 12 is aimed at examining the data submitted to SEAI and the Participants' sustainability and GHG savings records. So, when verifying that the systems used by Participants are accurate, reliable and protected against fraud, the auditor should be reviewing how the data submitted to SEAI was generated, the back-up documentation, are internal checks carried out, etc.
3	Provide a statement that engagement was carried out to <i>limited</i> assurance. Limited assurance is described in Section 3.6.1.
4	A copy of the information to be submitted to SEAI in the forms by the Participant shall be appended to the report. This is required to confirm what information was audited and to enable SEAI to cross check that the audited information matches that submitted by the Participant in the forms. It is sufficient to include a screen shot of the information to be reported in the 'Information on Installation' and 'Statement of Compliance' forms in the auditor's report. By including these in the auditor's report, the auditor is showing what information was examined.
5	In the event of resubmission of revised data to SEAI by the Participant, a statement within a revised auditor's report that the auditor has taken the changes into account in providing a new assurance statement for information that was previously submitted but was changed following review by SEAI. The purpose of this requirement is to ensure that any revised data that may be submitted to SEAI is taken into account by the auditor, and to acknowledge that a revision has been carried out.

3.5 Combined IVR and Auditor's Report

The IVR and the auditors' report may, for the convenience of Participants, be combined and carried out by the same independent person, i.e. the same person may act as the Independent Verifier and the independent auditor. Where this is carried out, the Independent Verifier shall include within the scope of the engagement all the data submitted to SEAI in the forms (installation information and sustainability statement), and the Participant's records of sustainability criteria related data (Section 3.2.2 details the records that may be available).

If this combined IVR is prepared by an Independent Verifier, the IVR shall, in addition to the items set out in Table 8, include items 1 (frequency and methodology of sampling and robustness of the data) and 2 (accuracy, reliability and protection against fraud) contained in Table 9.

3.6 Assurance Engagement

3.6.1 ISAE 3000

For verification and auditing of the data submitted to SEAI, and the sustainability and GHG emissions saving data, the Regulations state that the verification and auditing must meet the requirements for assurance engagements, as may be approved by SEAI. SEAI has specified ISAE 3000. At the time of writing, SEAI is not aware of any equivalent standards to ISAE 3000. If a Participant in a support scheme or renewable energy obligation, or an Independent Verifier, wishes to use an alternative standard, they should contact SEAI to discuss this.

ISAE 3000 is an international standard developed by the International Auditing and Assurance Standards Board (IAASB). It is a standard for assurance engagements other than audits or reviews of historical financial information. ISAE 3000 defines two levels of assurance: *limited* and *reasonable*.

The level of assurance relates to the level of engagement risk. This is the risk that the Verifier expresses in an appropriate conclusion. As limited assurance involves limited evidence gathering activities, the assurance opinion is expressed in the negative form, for example: "*Based on our review, nothing has come to our attention to cause us to believe there are errors in the data.*" Reasonable assurance requires a higher level of evidence gathering and as such the assurance opinion is expressed in a positive form, for example: "*... based on our assessment, the data is free from material misstatement.*"

By expressing the conclusion in this manner, the Verifier is being clear that the level of confidence which users of the assurance statement place on the conclusion must be taken in the context of the nature and extent of evidence gathering that the Verifier has undertaken and described in the assurance opinion.

While SI 350 does not specify the level of assurance required for data submitted, SEAI has determined that the level of assurance required for data submitted to SEAI is *limited*.

3.6.2 Independence

ISAE 3000 requires that '*The practitioner should comply with the requirements of Parts A and B of the Code of Ethics for Professional Accountants, issued by the International Ethics Standards Board for Accountants (the IESBA Code)*'. This Code provides a framework of principles that members of assurance teams, firms and network firms use to identify and safeguard against any threats to independence. Although the IESBA code does not, of itself, preclude a qualified person within the Participant's organisation (such as an internal auditor) from providing assurance, this is not sufficient to satisfy the requirements of Regulation 10 (3) or 12 (2) of SI 350.

SI 350 requires that the assurance provider is '*independent*' and as such for the purposes of SEAI's Procedure, verification or auditing by a person within the Participant's organisation is not considered to be independent assurance. The Procedure also requires that the assurance provider is not a 'connected person' of the Participant, as defined in Section 10 of the Taxes Consolidation Act 1997.

Threats to independence may also exist where a Verifier/Auditor is independent of the Participant but has been engaged by them in another capacity relating to the sustainability information. For example, if a Verifier/Auditor has previously worked with a Participant to design or implement controls over that information.

3.6.3 Professional competencies

The Verifier's and auditor's assurance opinion must be produced by a person with appropriate expertise. ISAE 3000 requires that '*The practitioner [Verifier/auditor] should accept (or continue where applicable) an assurance engagement only if the practitioner is satisfied that those persons who are to perform the engagement collectively possess the necessary professional competencies*'. This includes both the work of the Verifier/auditor itself, and any expert that it may engage to assist with the assurance.

Competence to undertake assurance engagements under ISAE 3000 or such equivalent standard as may be agreed by SEAI is a requirement of the Procedure. The extent to which expert skills and knowledge relating to sustainability and GHG emissions savings data, or data on the installation is required will depend on the complexity of the fuel supply chain and the installation.

Participants should ask Verifiers/auditors to demonstrate their competencies as part of the appointment process. For example, in selecting a Verifier/auditor, Participants may require the assurance provider to demonstrate that it:

1. Is independent of organisations involved in the production of the biomass fuels;
2. Has established and maintains personnel records which demonstrate that its personnel are competent;
3. Has effective procedures for training and recruitment of competent staff (employees and contractors);
4. Ensures that the personnel involved are competent for the functions they perform including experience of carrying out ISAE 3000 assurance engagements and appropriate understanding and experience of the type of information they will be reviewing;
5. Has systems to monitor the performance of Verifiers, which are reviewed regularly;
6. Keeps up with verification best practice.

SEAI does not accredit or recognise Verifiers or Auditors. It is the responsibility of the Participant to ensure that the appointed Verifier/auditor is independent, suitably qualified and possesses the appropriate understanding of the installation and the biomass fuel.

3.6.4 Verification and Auditing Activities

It is good practice to engage a Verifier/auditor as early as possible in the process to establish what evidence the Verifier/Auditor will require and to help identify any difficulties early on. Common verification and auditing practice is to supply the information to the Verifier/auditor in an organised evidence pack. This may include the following.

1. A copy of the data to be submitted to SEAI by the Participant in the support scheme or renewable energy obligation.
2. A high-level description of the supply chain.
3. All supporting evidence held, such as Voluntary Scheme proofs of sustainability.
4. Any audit reports that the Participant has relied upon in compiling the data to be submitted to SEAI.
5. Certification and supporting assurance opinions held.
6. Periodic inventory records for the Participant's mass balance system.
7. Calculation spreadsheets (preferably supplied electronically so that Verifiers/auditors can test the formulae).
8. Contact details of the organisations in the previous stages in the supply chain (where available).

If this data is not provided in an ordered fashion, the Verifier/auditor may need to request information that may increase the effort required to carry out the engagement.

Assurance is to be provided on the Participants' reported data, not the systems and processes used to generate the data. Nonetheless, these controls may be examined, and the greater the confidence that can be placed on them, the less effort will be needed to verify and audit the information. Evidence of the effectiveness of controls can come from internal sources, such as management reviews and internal audits, as well as from external audits.

There is no requirement to pass physical evidence (such as copies of invoices etc.) from farms, processors or other suppliers along the supply chain. The party which generates the data can retain this evidence. It is not necessary to verify or audit information that has been provided through an approved Voluntary Scheme. Notwithstanding this, in verifying and auditing the data on sustainability and GHG emissions savings reported to SEAI, the Verifier/auditor may work back up the supply chain to the source data using chain of custody records. The co-operation of those in the supply chain is therefore important. The exact approach may vary with each Verifier/auditor and supply chain.

3.7 Roles and responsibilities

3.7.1 Verifiers & Auditors

The Verifier/auditor is responsible for:

1. Planning and carrying out evidence gathering and testing activities to form an opinion on the data.
2. Informing Participants of any changes to data which must be made and of any consignments which should be withdrawn from verification or auditing.
3. Providing an assurance opinion or, if necessary, a qualified opinion or disclaimer of opinion, in accordance with ISAE 3000 or an equivalent standard, to the Participant.
4. Preparing an IVR/Annual auditor's report setting out, *inter alia*, the Verifier's/auditor's opinion, the evidence gathered to inform the opinion, and addressing the specific requirements of SEAI's Procedure.

3.7.2 Participants

Participants in support schemes or renewable energy obligations are responsible for *inter alia*:

1. Preparing and submitting the installation information and the statement of compliance (in the forms) by the deadline.
2. Ensuring they have evidence (or that this evidence exists in the chain of custody or is held by the Participant) to support the information submitted in the forms. This may include, for example, Voluntary Scheme proofs of sustainability for the biomass fuels, the thermal rated input of the installation, and calculations of GHG emissions savings (see Section 2.4.5.4).
3. Appointing Independent Verifiers and auditors²⁹ that are competent to undertake assurance engagements.
4. Notifying SEAI of the Verifier and auditor²⁹ appointed, in the forms.
5. Providing supporting information and evidence to the Verifier and auditor²⁹ and facilitating any visits.
6. Assisting the Verifier and auditor²⁹ contact and gain access to other organisations in the supply chain, if necessary.
7. Correcting any data the Verifier and auditor²⁹ finds to be misstated or insufficiently supported by evidence.
8. Informing SEAI if errors are discovered in the data, after the submission form has been submitted.

²⁹ As set out previously, the role of Verifier and auditor may be combined and carried out by a single Independent Verifier.

9. Submitting the forms, the IVR, and the annual auditor's report no later than the deadline dates.

4 Annex 1 – SI 350 of 2022

4.1 Introduction

SI 350 of 2022 places requirements on SEAI and Participants in support schemes and renewable energy obligations to comply with the sustainability and GHG emissions savings criteria. The purpose of this Annex is to provide further information on interpreting some of the regulations, where it may be required, and how the regulations interact with each other.

Each of the individual regulations are listed in Table 10. The regulations that are most relevant to SEAI in the context of establishing a verification procedure for ensuring the sustainability of biomass fuels are Regulations 6, 8, 10, 12, 14, Schedule 3, and, to a lesser extent, Regulations 5 and 19 (all highlighted below).

Table 10: SI 350

Regulation No.	Description
1.	Citation and commencement
2.	Interpretation (definitions and references)
3.	Calculation of share of energy from renewable source
4.	Minimum share of renewable energy within the final consumption of energy in the transport sector
5.	Support schemes and renewable energy obligations
6.	Biofuels, bioliquids and biomass fuels meeting sustainability and greenhouse gas emissions saving criteria
7.	Bioliquids - verification of compliance with the sustainability and greenhouse gas emissions saving criteria
8.	Biomass fuels - verification of compliance with the sustainability and greenhouse gas emissions saving criteria
9.	Bioliquids – information from Participants
10.	Biomass fuels – information from Participants
11.	Bioliquids – independent audit of records
12.	Biomass fuels – independent audit of records
13.	Statement of compliance with sustainability criteria – bioliquids
14.	Statement of compliance with sustainability criteria – biomass fuels
15.	Provision of information to the European Commission and the SEAI
16.	Amendment of the Act of 1999 (Electricity Regulation Act)
17.	Amendment of the National Oil Reserves Agency Act 2007 (BOS Act)
18.	Amendment of the Regulations of 2012 (Sustainability Regulations)
19.	Supervision of the operation of certification bodies for biomass fuels

Regulation No.	Description
20.	Supervision of the operation of certification bodies for bioliquids
21.	Amendment of the Regulations of 2022
22.	Conferral of vires on SEAI
23.	Single contact point
24.	Supervision and issuance of guarantees of origin for electricity
25.	Supervision and issuance of guarantees of origin for gas
26.	Functions of the guarantee of origin
27.	Eligibility and characteristics of a guarantee of origin
28.	Request for issue of guarantee of origin from electricity and information required
29.	Request for issue of guarantee of origin from electricity and information required
30.	Recognition of guarantees of origin
31.	Recoupment of costs
32.	Guarantee of origin for high efficiency CHP
33.	District Heating and Cooling
34.	Revocation and continuance
Schedule 1	Calculation of RES Share
Schedule 2	Calculation of share of renewable energy within the final consumption of energy in the transport sector
Schedule 3	Sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels

4.2 Regulation 6 – meeting sustainability and greenhouse gas emissions saving criteria

4.2.1 Definitions

Neither the '*total thermal rated input*' nor an '*installation*' are defined in SI 350 or RED II. There is, however, guidance from other related sources. Guidance from the European Commission in the context of the EU ETS provides the following³⁰.

'The maximum rated thermal input is normally specified by the manufacturer and is displayed on the technical device with the consent of an inspection body. Where different fuels or fuel mixes can be used, leading to different maximum thermal inputs, the highest possible thermal input should be used.'

³⁰ https://climate.ec.europa.eu/system/files/2016-11/guidance_interpretation_en.pdf

When no information from the manufacturer is available, the operator of the installation shall provide to the competent authority an estimate based on best available information (for example maximum fuel throughput achieved in 24h during the last calendar year). As in most cases the exhaust gas has a temperature above 100°C, and in line with monitoring requirements defined by the MRG [Monitoring and Reporting Guidelines], net calorific values (NCV) are considered most appropriate for determination of the thermal input.'

In relation to what constitutes an 'installation', the following definition provided by the SURE Voluntary Scheme³¹ is useful:

'the totality of all functionally related technical and structural facilities required to generate electricity and/or heat. This means that all facilities installed in (immediate) physical proximity to each other, such as combined heat and power plants connected to the same fermenter or several boiler systems using the same steam turbine, form a single unit. Investments in expansion, such as the connection of an additional combined heat and power plant to an existing biogas plant, are also considered to be a single installation and not a second, newly commissioned installation.'

4.2.2 Regulation 6 (1) – Requirements

Regulation 6 (1) requires Participants to comply with all the requirements of Schedule 3 (sustainability and GHG emissions savings criteria), and with Regulations 6 (2) to (10) and Regulations 12 and 14. Thus, all biomass fuel supplied for electricity, heating and cooling and fuels, regardless of the origin of the biomass, with the exception of that which is use in installations below the thermal input threshold values specified in Regulation 6 (4), must comply with these Regulations.

4.2.3 Regulation 6 (2) – Waste & Residues

Regulation 6 (2) specifies that wastes and residues (excluding those from agriculture, aquaculture, fisheries and forestry) only need to apply the GHG savings criteria (i.e. the sustainability criteria do not apply). For example, there are no sustainability criteria for biomethane produced from food waste. This is because the sustainability criteria cover matters related to land use, carbon stock, biodiversity, and forestry. The generation of food waste does not impact on any of the sustainability criteria; thus they are not relevant to certain wastes and residues.

4.2.4 Regulation 6 (3) – MSW

There is an error in Regulation 6 (3). Article 29 (1) of RED II, which is transposed by Regulation 6 (3), states that '*Electricity, heating and cooling produced from municipal solid waste [MSW] shall not be subject to the greenhouse gas emissions saving criteria laid down in paragraph 10.*' Paragraph 10 contains the GHG savings thresholds. Thus, RED II is stating that there are no GHG savings requirements for MSW used to produce electricity, heating or cooling. This is how SEAI will be implementing this requirement.

Regulation 6 (3) states that '*Municipal solid waste used to produce electricity and heating and cooling shall not be subject to the greenhouse gas emissions saving criteria referred to in paragraphs (1) to (6) of Schedule 3*'. Paragraphs (1) to (6), however, refer to the sustainability criteria, not the GHG emission savings thresholds.

4.2.5 Regulation 6 (4) – Thresholds

Regulation 6 (4) provides an exemption for solid biomass fuels used in installations that have a total thermal rated input less than 20 MW when producing fuels, electricity, heating and cooling. For gaseous fuels, the

³¹ https://sure-system.org/images/Systemdokumente_EN/Technical_Guidances/TG-DEF-en-13_Definitions_final.pdf

threshold is 2 MW. Thus, biomass fuels used in installations below these thresholds do not need to demonstrate compliance to the support scheme or renewable energy obligation administrator.

4.2.6 Regulation 6(5) – Country of Origin

Regulation 6 (5) ensures that all biomass fuel, regardless of the country of origin, must demonstrate that it meets the sustainability and GHG emissions savings criteria.

4.2.7 Regulations 6 (6), (7), (8) & (9) – Electricity

Regulation 6 (6) and (7) apply to biomass fuels used to produce electricity in installations that started operating (or converted to the use of biomass fuels) after 2021. Thus, to determine if these Regulations apply, Participants will need to report when the installation started operating or when it was converted to using biomass fuels. Participants also need to report several additional items of information, such as the total rated thermal input of the installation (see section 4.2.2), the type of installation (electricity-only or other), and, depending on the type and size of the installation, if there is biomass CO₂ capture and storage and if the electricity is produced using high-efficiency CHP. This information needs to be reported to establish if it is necessary to submit sustainability and GHG emissions savings information.

4.2.8 Regulation 6 (10) – Financial Support

According to Regulation 6 (10), only biomass fuels deemed to fulfil the requirements of Regulation 6 (1) are eligible for financial support.

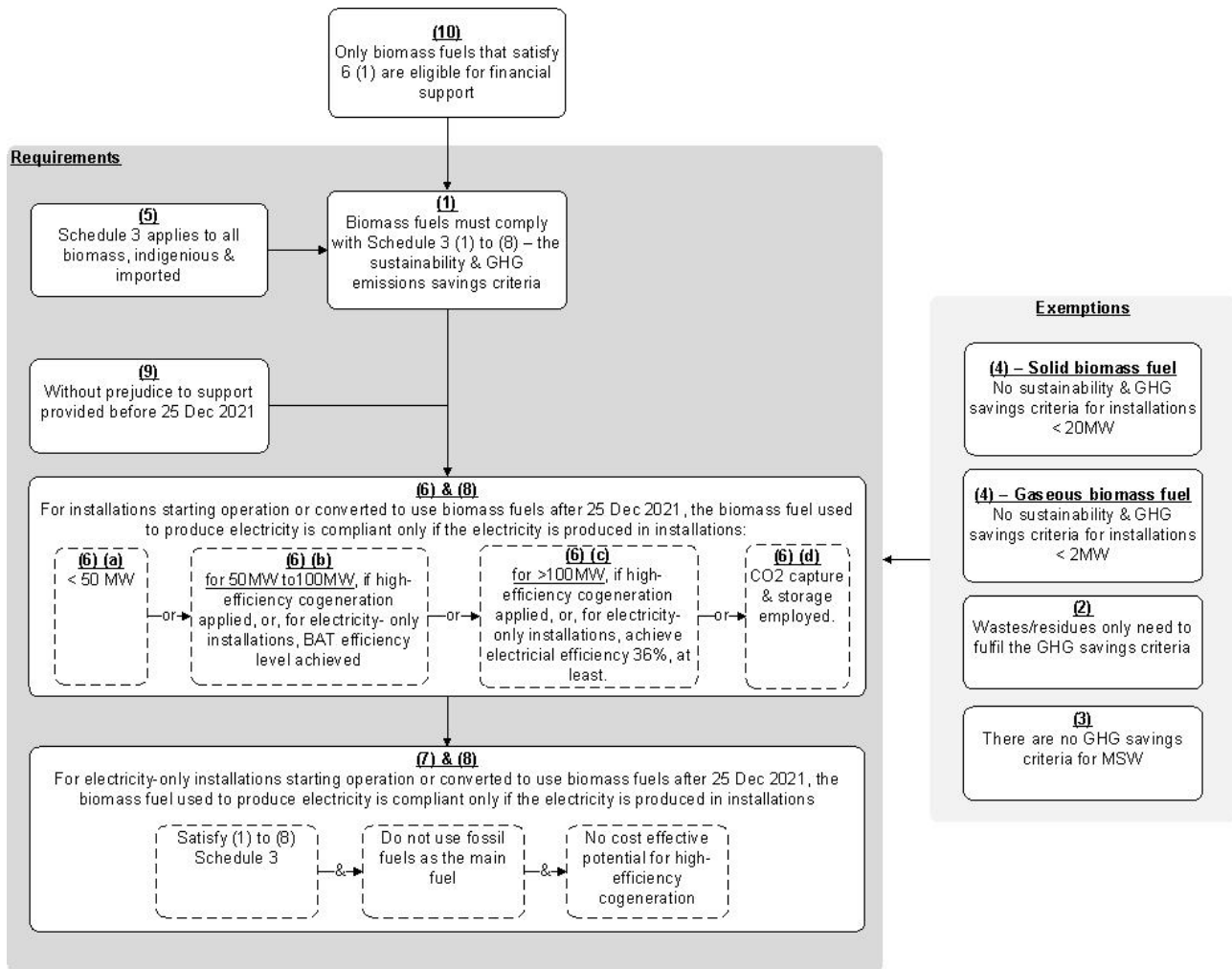
4.2.9 Summary

The following flowchart illustrates the application of Regulation 6 of SI 350. It shows how the individual regulations interact, starting with the caveat that only biomass fuels which comply with Regulation 6 are eligible for financial support. There are some exemptions from this, namely,

- Solid biomass used in installations producing electricity, heating and cooling or fuels with a total rated thermal input less than 20 MW;
- Gaseous biomass used in installations producing electricity, heating and cooling or fuels with a total rated thermal input less than 2 MW;
- Wastes and residues only need to fulfil the GHG emissions savings criteria;
- The GHG emission savings criteria do not apply to MSW.

Regulation 6 makes it clear that the GHG and emissions savings criteria detailed in Schedule 3 apply of all biomass (indigenous and imported) and to be eligible for support it must be demonstrated that the biomass fuel satisfies the criteria. There are also requirements placed on installations that starting operating (or converted to use biomass fuels) after December 2021 to demonstrate various operating conditions are met (Regulations 6, 7 and 8).

Figure 4: Regulation 6



4.3 Regulation 10 – Biomass fuels – information from Participants

Regulation 10 sets out the information to be submitted to SEAI. This information is required to:

1. Ensure the requirements of Regulation 15 (information to be supplied to the Minister) can be fulfilled;
2. enable SEAI to verify that the sustainability and GHG emission savings criteria have been adhered to; and
3. gather other data to provide SEAI with a greater understanding of the impact and role of biomass fuels.

4.3.1 Regulation 10 (1) (a) – Default / actual values

Regulation 10 (1) (a) requires Participants to submit data on whether the GHG emissions savings are calculated using 'default' carbon intensity values provided in Annex VI of RED II, or 'actual' values calculated in accordance with the methodology set out in Annex VI of RED II.

Default values are GHG emissions that have been calculated by the European Commission and can be used by biomass fuel producers and suppliers. RED II, Annex VI provides GHG savings and carbon emissions for several biomass fuel chains. For each biomass fuel chain, a 'typical' and 'default' carbon intensity emission value is provided. 'Disaggregated defaults' are also provided, which provide a breakdown of the emissions from each of the three main stages of the supply chain (cultivation, transport and processing).

The default values may not meet the thresholds for GHG emissions savings that are specified in SI 350, or there may not be default values available for the specific biomass fuels. In such cases, it is necessary to calculate the 'actual' carbon intensity values. The methodology for calculating actual carbon intensity values and using default and disaggregated default values is discussed in Section 2.4.5.

4.3.2 Regulation 10 (1) (b) – measures taken

Regulation 10 (1) (b) requires '*details of measures taken*' to comply with the sustainability criteria set out in Schedule 3 to be submitted to SEAI. According to Regulation 14, the methods available to Participants to demonstrate compliance with the sustainability and GHG savings criteria are either through compliance with a national scheme established by another Member State or through a Voluntary Scheme. Since SEAI is not establishing a national scheme, the only measures that can be taken by a Participant to comply are to purchase biomass fuels that are certified by a national scheme of another Member State or by a Voluntary Scheme, or for the Participant to be Voluntary Scheme certified. Thus, what needs to be reported is the name(s) of the Voluntary Schemes that have certified the biomass fuels.

4.3.3 Regulation 10 (1) (c) – GHG emissions savings methodology

Regulation 10 (1) (c) requires that '*details*' of the application of the methodology for calculating GHG emissions are provided. Given the carbon intensity of the biomass fuel is the primary output from applying the calculation methodology, and it will also demonstrate the GHG emissions savings threshold has been satisfied, the '*details*' to be reported are the carbon intensities for each of the individual consignments. The methodology for calculating actual carbon intensity values and using default and disaggregated default values is discussed in Section 2.4.5.

Regulation 10 requires the above information to be reported for each consignment of biomass fuel. A consignment represents an amount of biomass fuel that has the same sustainability and GHG emissions savings characteristics. While a delivery of biomass fuel may be made-up of one consignment, it is likely that deliveries are composed of several consignments. For example, a delivery of biomethane produced from sewage sludge processed in an anaerobic digestion plant in Dublin with a carbon intensity of 10 gCO_{2eq}/MJ could be a single consignment. It is more likely, however, that a delivery will be composed of several smaller consignments that may include biomethane produced from sewage sludge, food waste, brown grease, grass, etc. While all the feedstocks may be mixed at an anaerobic digestion plant to produce biogas (and upgraded to biomethane), each feedstock has its own characteristics that impact differently on the carbon intensity of the biogas. This concept is discussed further in Section 2.4.3.5 (mass balance).

4.4 Regulation 12 – Independent audit of records

Regulation 12 requires Participants to maintain records of sustainability and GHG savings data for all the biomass fuel it consumes or produces. It also requires these data, and that submitted to SEAI under Regulation 10, to be independently audited, and for an audit report to be submitted annually. Regulation 10 (2) also requires a report to be provided verifying the information being submitted and for the verification to be carried out by an independent person. Given the overlap in the verification and auditing of information, and to avoid placing an excessive burden on Participants in support schemes or renewable energy obligations, SEAI has allowed Participants to combine these requirements and one independent verification report (IVR) may be submitted annually.

The requirements for the verification and auditing of information are detailed in Section 3.

4.5 Regulation 14 – Statement of compliance

Regulation 14 requires Participants to submit a statement of compliance with the sustainability and GHG

emissions criteria identifying whether an approved Voluntary Scheme or national scheme of another Member State has been used. Although there is an option to demonstrate compliance through an Irish national scheme, SEAI has not established a national scheme for Ireland and instead relies on Commission approved Voluntary Schemes or national schemes of other Member States.

Similar requirements are also set out in Regulation 10. Thus, SEAI only requires one 'statement of compliance' to be submitted. The sustainability and GHG emissions savings data submitted in the annual application, which includes for the name of the voluntary or national scheme for each consignment of biomass fuel, is deemed to be the statement of compliance.

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