

Green Gold Label Standard GGLS1 Chain of Custody criteria

Requirements, background and templates
for the GGL Chain of Custody (COC)



Standard GGLS1

Chain of Custody criteria

Version 4-0

Valid from 1 January 2026 (Adoption date)

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Document navigation

This document is part of the GGL Standards, which are included in the Overall documents. It concerns Standard GGLS1 of the GGL scheme and applies to all regulatory frameworks.

The Overall documents comprise the GGL Setup and Governance, GGL Standards and GGL Operating documents. Additionally, the GGL scheme offers Instructions and Guidances for specific regulatory frameworks (RED, FIT/FIP, SDE+/++), which can supersede clauses in the Overall documents. This applies only when explicitly stated in the relevant Instructions and Guidances.

Refer to the **GGL Document Structure** (as part of the GGL Setup and Governance documents) for more detailed information on navigating and interpreting GGL documentation.

GGL Setup and Governance - Articles of association GGL foundation - GGL Document structure - GGL Regulation - GGL Scope definitions - GGL CB agreements - GGL Partner Code of Conduct - GGL Operating Agreement	GGL Standards GGLS1 – Chain of custody criteria - GGLS2 – Agricultural source criteria - GGLS4 – Transaction and Product Certificate - GGLS5 – Forest management criteria - GGLS6 – Power company criteria	RED – Instructions - Instruction A.0 – RED Module - Instruction A.1 – RED Reporting duties - Instruction A.2 – RED Internal monitoring - Instruction A.3 – RED Auditor requirements - Instruction A.4 – RED GHG emissions - Instruction A.5 – RED Additional Agricultural source and Forest management criteria	RED – Guidances - Guidance A.0.i – RED Raw materials statement template - Guidance A.0.ii – RED Transaction certificate template - Guidance A.0.iii – RED Audit template - Guidance A.4.iv – RED GHG default values - Guidance A.5.v – RED Level A Risk assessments	GHG Guidance Guidance ABC.1 – GHG calculator
	GGL Operating documents - GGL Participant fees - GGL Logo and tradename use - GGL List of prohibited materials	FIT / FIP – Instructions - Instruction B.0 – FIT/FIP Module - Instruction B.1 – FIT/FIP Endorsed schemes - Instruction B.2 – FIT/FIP GHG emissions	FIT / FIP – Guidances - Guidance B.0.i – FIT/FIP Raw materials statement template - Guidance B.0.ii – FIT/FIP Transaction certificate template - Guidance B.0.iii – FIT/FIP Audit template - Guidance B.0.iv – FIT/FIP Supplier verification checklist for residues - Guidance B.2.v – FIT/FIP LCGHG default values	
		SDE++ – Instructions - Instruction C.0 – SDE++ Module - Instruction C.1 – SDE++ Endorsed schemes - Instruction C.2 – SDE++ GHG emissions	SDE++ – Guidances - Guidance C.0.i – SDE++ Raw materials statement template - Guidance C.0.ii – SDE++ Transaction certificate template - Guidance C.0.iii – SDE++ Audit template	

The GGL standards are applicable as per indicative illustration i below.

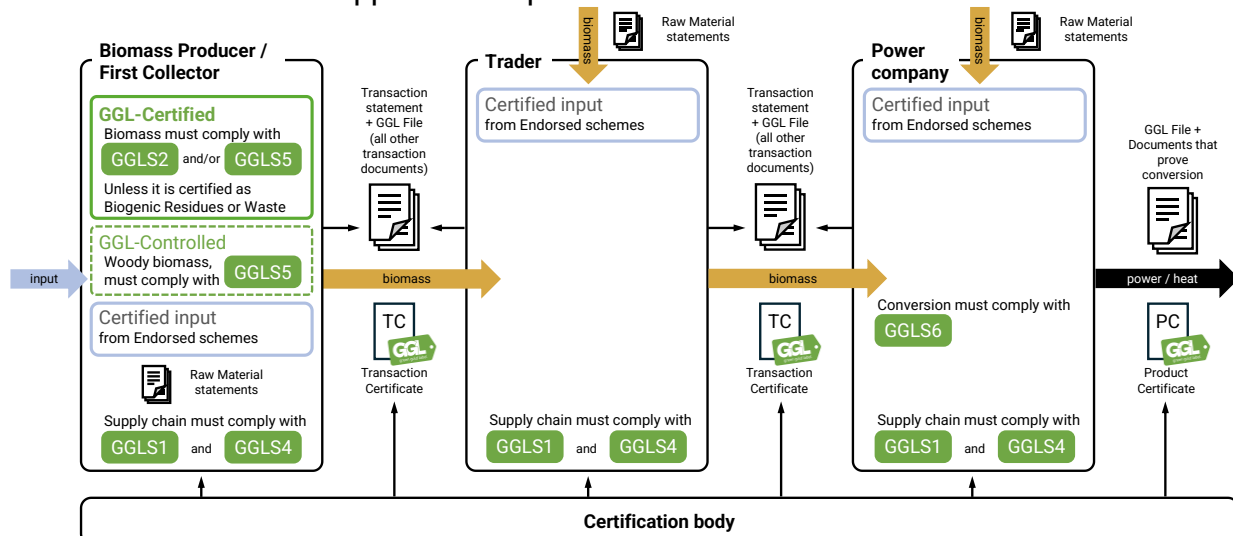


Illustration i – applicability of GGL Standards

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Changes and transitioning

This section lists the key changes in this version from version **GGLS1 COC criteria v3-1 (May 2018)**.

No.	Change type	Section reference	Details of change
1	Content	N/A	Removed risk-based approach for GGL-Controlled biomass under GGL (no longer valid)
2	Content	Section Error! Reference source not found.	Included allocation logic to GGL Categories of biomass
3	Content	Principle 2	Included GGL Scope and GGL Modules to strengthen structure of the GGL Scheme
4	Content	Principle 2	EUDR-compliance included when applicable
5	Content	Principles	Principles regrouped for simplified structure (GGL Categorization of biomass to Principle 1)
6	Content	Principle 2 and Principle 4	Included prohibited locations of GGL Participants and prohibited Points of origins
7	Content	Principle 5	Clarified difference between GGL-Certified and GGL-Controlled woody biomass; Strengthened requirements for GGL-Controlled woody biomass; Redefined applicable standards for GGL Category 3 biomass
8	Content	Principle 8	Added requirements for physically mixing batches of GGL Biomass with different characteristics
9	Content	Principle 9	Added staff wellbeing requirements for GGL Participants
10	Content	Principle 10	Included the upstream verification mechanism for GHG deployed across the GGL scheme
11	Content	Document navigation	Illustration updated for clarity
12	Text feature	Document navigation	Included document navigation
13	Text feature	Changes and transitioning	Included changelog and transitioning procedure between previous and current version
14	Text feature	Glossary	Included glossary
15	Formatting	All	Changed and edited formatting, text and wording for clarity and readability
16	Formatting	All	Converted layout to new templates for GGL Documents

In transitioning to this current version of this document, the following applies to Certification bodies, Participants and Certificates:

Publication date	7 November 2025
Adoption date	This document version <u>applies only</u> for the GGL Scope with FIT/FIP-Module as of: • 1 January 2026
Effective date	The previous version of this document <u>becomes ineffective</u> for the GGL Scope with FIT/FIP-Module as of: • 2 March 2026
Transition period	Certification decisions prior to Effective date based on the previous version of this document <u>lose their validity</u> for the GGL Scope with FIT/FIP-Module as of: • 31 December 2026

To clarify: For GGL Scopes with the **SDE+ Module**, only the previous version of this document can be used and remains effective until further notice.

Glossary

Term	Definition
Adoption date	New (versions of) GGL documents state their Adoption date in the transitioning section. This is the date after which certification against the GGL Scheme and the specific document to which the Adoption date applies, is possible. Certification against previous versions remain valid until the Effective date of such document.
Amount of GGL Biomass	This is the amount of GGL Biomass in metric ton (MT).
Audit	Formal examination and inspection by a GGL approved Certification Body of an organization's processes and activities to verify compliance. By contrast, an audit is different from an internal audit.
Batch	A quantity or consignment of biomass produced at one time covered by one Raw Material Statement.
Biomass producer	The first participant of the GGL supply chain for woody and agricultural biomass (GGL categories 1, 2, 3 and 4) who produces raw material by harvesting or farming activities for which Raw Materials Statements are delivered. Biomass Producers are comparable to First Collectors in the sense these are the first GGL Participants in a GGL supply chain.
Biomass	Biomass means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin.
By-product	A by-product is a secondary product derived from a production process, manufacturing process or chemical reaction, not a waste or residue. A by-product might not be the primary aim of such process but has a significant economic value other than its use as biomass.
Certification Body / CB	An independent third party that evaluates and certifies the certification process. Certification Bodies approved by GGL for 1 or more GGL Scopes, are listed on the GGL website.
Conversion factor	The ratio between the mass of the output that is intended for biofuel production and the mass of the raw material entering the process.
Co-product	A useful product produced together with the main product, not a waste or residue. As such, the co-product shares in the greenhouse gas emission burden.
Credit system / volume credit system	Volume credit system is a chain of custody approach and mass balance system that allows tracking the net amount of sustainable materials as they move through a system or supply chain and ensures an appropriate allocation of these materials to the finished goods based on auditable bookkeeping. GGL does not allow application of the volume credit system for all types of biomass and for all GGL Scopes. The system deployed by GGL to support mass balance administrations is defined in GGLS1 - Chain of Custody criteria.
Direct origination / [...] originate directly	Biomass in GGL Categories 1, 2, 3 and 4 originate directly during harvesting and / or farming activities, meaning that such biomass originates on the location and at the time when the primary products (e.g., wood, agricultural products) originate.

Term	Definition
Effective date	New (versions of) GGL documents state their Effective date. This is the date after which only certification against the GGL Scheme and the specific document to which the Effective date applies, is effective. Certification against previous versions of such document is no longer valid.
EORI number	The Economic Operators Registration and Identification (EORI) number is a unique identifier assigned to businesses and individuals involved in customs activities within the European Union, particularly to comply with EUDR regulations.
First Collector	The first participant of the GGL supply chain for residues and wastes (GGL category 5) who collects the raw material from suppliers by whom Raw Materials Statements are delivered. First Collectors are comparable to Biomass Producers in the sense these are the first GGL Participants in a GGL supply chain.
FMU / Forest Management Unit	A well defined and demarcated land area, predominantly (i.e., >50%) covered by forests, with planned human intervention in a forest ecosystem to achieve specific goals and objectives.
Foundation / GGL Foundation	Green Gold Label Foundation is the owner of the Green Gold Label (GGL) scheme including all technical documents, promotional documents and logo's, website(s) and other intellectual properties relating to GGL.
GGL Biomass	Biomass that has been certified with a GGL-Certified or GGL-Controlled claim as the case may be.
GGL Categories	Biomass from 1 of the 5 categories that GGL recognizes being: 1) Woody biomass from large FMU's (> 500 hectares) 2) Woody biomass from small FMU's (< 500 hectares) 3) Residues from natural site and landscape management 4) Agricultural biomass 5) Biogenic residues and waste
GGL File	[From GGLS4 - Transaction and product certificate] The comprehensive records and documents that are used to verify compliance with applicable regulations, including but not limited to transaction statements, compliance records, verification procedures, supply chain documentation and transport documents.
GGL Module	These are the Instructions and Guidance documents based on which GGL has been approved and recognized as a Certification scheme under different legal and voluntary frameworks (e.g., RED in Europe, FIT/FIP in Japan).
GGL Scope	Means the scope of a Certification Body's license to perform certification services or Participants to trade biomass within GGL, and use the GGL Trademark. A GGL Scope is a combination of (a) regulation(s) under which GGL is recognized per its different modules and (b) types of biomass. Each GGL Participant and each CB is limited to perform activities under the GGL Scheme by the GGL Scope for which it is recognized. GGL Scopes are defined in the GGL Scope definitions document.

Term	Definition
GGL-Certified	Biomass that has been certified against all applicable GGL criteria, or against a certification scheme other than GGL which has been endorsed & approved by the relevant authorities (e.g., EU for REDII, METI for FIT/FIP) to holds the equivalent status. GGL-Certified biomass meets all criteria for sustainability and legality.
GGL-Controlled	Woody biomass that has been certified against some of the applicable GGL criteria, or against a certification scheme other than GGL which has been endorsed & approved by the relevant authorities (e.g., EU for REDII, METI for FIT/FIP) to holds the equivalent status. GGL-Controlled biomass can only be from GGL-categories 1, 2 or 3 for Woody biomass, and only meets specific key criteria for sustainability. The sustainability of GGL-Controlled woody biomass has therefore been certified to a lesser extent than GGL-Certified woody biomass.
GGLedger	IT platform that is made available by GGL, and which is intended to be an up to date and secure register of all Data that is either confidential or public information. The certification bodies are to ensure all data in GGLedger is actual, correct and secure.
GHG (Greenhouse Gas) Emissions	Greenhouse gases constitute a group of gases contributing to global warming and climate change. It includes - according to the Kyoto Protocol - seven gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, nitrogen trifluoride. Converting them to carbon dioxide equivalents (CO ₂ eq) makes it possible to compare them and to determine their individual and total contributions to global warming.
HCV / High conservation value	High Conservation Value (HCV) areas are natural habitats or landscapes that possess outstanding environmental, social, or cultural importance. These areas include ecosystems, species populations, or ecological functions that are critical at local, regional, or global levels.
Mass balance	Mass balance is a chain of custody approach that allows tracking the net amount of sustainable materials as they move through a system or supply chain and ensures an appropriate allocation of these materials to the finished goods based on auditable bookkeeping.
Normative	Normative elements are those that are prescriptive, that is they are to be followed in order to comply with scheme requirements.
Participant / GGL Participant	Economic operator that has been certified under GGL per GGL Regulation Section G or against a certification scheme other than GGL which has been endorsed & approved by the relevant authorities (e.g., EU for REDII, METI for FIT/FIP) to hold the equivalent status, such as forest and agricultural biomass producers, waste and residue producers, first gathering points, collectors, suppliers, traders, processing plants and conversion plants (end-users).
Point of origin	The location where the raw material is originally generated.
Processing	This relates to activities that change the physical or chemical characteristics of the biomass material. For instance, chipping, drying and pelletisation change the density or heating value of the material, while digestion or pyrolysis change the chemical characteristics.

Term	Definition
Producer	Producer of raw material to a First Collector under the supplier verification programme, who may or may not be certified as a GGL Participant.
PC / Product certificate	A certified statement of a final conversion of GGL Biomass by GGL Participants that meets requirements of GGLS4 - Transaction and product certificate .
Prohibited material	Material listed under GGL List of prohibited materials at the GGL Website
Publication date	New (versions of) GGL documents state their Publication date. This is the date at which that version is published. Certification against the new version of such document is not possible until after its Adoption date.
RMS / Raw Material Statement	A certified statement of raw material brought into GGL supply-chains by a GGL Participant that meets requirements of GGLS1 - Chain of custody criteria and of applicable GGL Modules.
RED	EU Renewable Energy Directive (EU) 2018/2001 (REDII) and amended by Directive (EU) Directive 2023/2413 (REDIII), most recent consolidated version (including amendments and corrections) as published on https://eur-lex.europa.eu
Residue	Residue means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it.
Site	Site means a geographical location, logistical facilities, transmission or distribution infrastructures with precise boundaries within which products can be mixed.
Supplier	Supplier of raw material from a Point of Origin to a First Collector or Biomass Producer. A supplier may not be certified as a GGL Participant.
TC / Transaction certificate	A certified statement of a transaction between GGL Participants that meets requirements of GGLS4 - Transaction and product certificate .
Transition period	New (versions of) GGL documents state their Transition period. This is the period within which (re-)certification decisions taken prior to the Effective date against the previous version of the current document, remain valid. Initial audits, renewal audits and surveillance audits by a Certification Body during the Transition period shall only take place against the current version of the GGL Scheme document to which the Transition period applies.
Union database / UDB	Union Database for Biofuels (UDB): it serves to improve the traceability of gaseous and liquid fuels in Transport Sector with the objective to avoid double counting and mitigating the risks for irregularities/fraud. The scope of the Union database as mandated under REDII Article 28(2) is on tracing consignments of liquid and gaseous fuels used in the transport sector. So this requirement is not relevant for schemes specifically targeting biomass fuels used for heat and electricity.
USI number	Unique identification number of GGL Participants and CB's and Users in GGLedger (consisting of 19 digits), comparable to a certificate number.

Term	Definition
Waste	Waste is a substance or an object which the holder discards or intends or is required to discard, that is not considered a by-product, and excludes substances that have been intentionally modified or contaminated in order to meet this definition.

A. Introduction & scope

A.1

Green Gold Label biomass consists of (residual) products of agricultural or forestry origin and related industries that are compliant with requirements for sustainable biomass in various national and international legal frameworks.

A.2

The geographical scope is global and covers the whole supply chain from initial biomass sourcing until the final user of the biomass. GGL biomass consists of natural material from responsibly managed forestry, agricultural production and plantations in accordance with the Green Gold Label standards (GGLS). The GGL standards cover all transactions of products produced, processed and sourced in order to demonstrate the responsibly managed and sustainable origin of the materials by GGL Participants.

A.3

GGL Participants shall comply with the **GGLS1 – Chain of Custody criteria** as set out by the Principles and Criteria below. Generally, the original biomass producer is the first step in the GGL chain of custody. Participants trade and/or convert the material sold as GGL certified (biomass). In case the Participant is partly or completely outsourcing the production of the GGL products and (raw) materials, the involved production units must comply with **GGLS1 – Chain of Custody criteria** as well and completely. This standard applies to each individual Participant.

A.4

In order to sell (claim) GGL-Certified or GGL-Controlled biomass a Participant must meet all relevant requirements from **GGLS4 - Transaction and product certificate**.

A.5

GGL certifies compliance with several regulatory frameworks through different GGL Modules (for example, EU RED, Japanese FIT/FIP and Dutch SDE++). Specific requirements per regulatory framework are set via Instructions and Guidances of each GGL Module. In order to meet all requirement of the **GGLS1 – Chain of Custody criteria** standards, the Participant therefore shall also comply in full with all Instruction and Guidance documents for the respective GGL Module.

A.6

All GGL Standards are normative unless stated otherwise.

B. Principles

Principle 1. Each Certification Body, Participant and batch of Biomass shall share one (1) or more GGL Scopes within GGL supply chains

- 1.01 The GGL Scope attribute is defined in **GGL Scope Definitions**, and its shared understanding is crucial for how the GGL Scheme works across its different Modules.
- 1.02 All input material shall be categorised according to their material origin and GHG composition based on the following material categories:
- Category 1: Woody biomass from large FMUs (>500ha)
 - Category 2: Woody biomass from small FMUs (<500ha)
 - Category 3: Residual biomass from natural site and landscape management
 - Category 4: Agricultural biomass
 - Category 5: Biogenic wastes and residues
- 1.03 Allocation of inputs follows the decision process below in Illustration ii to classify material in one (1) of the GGL Categories.

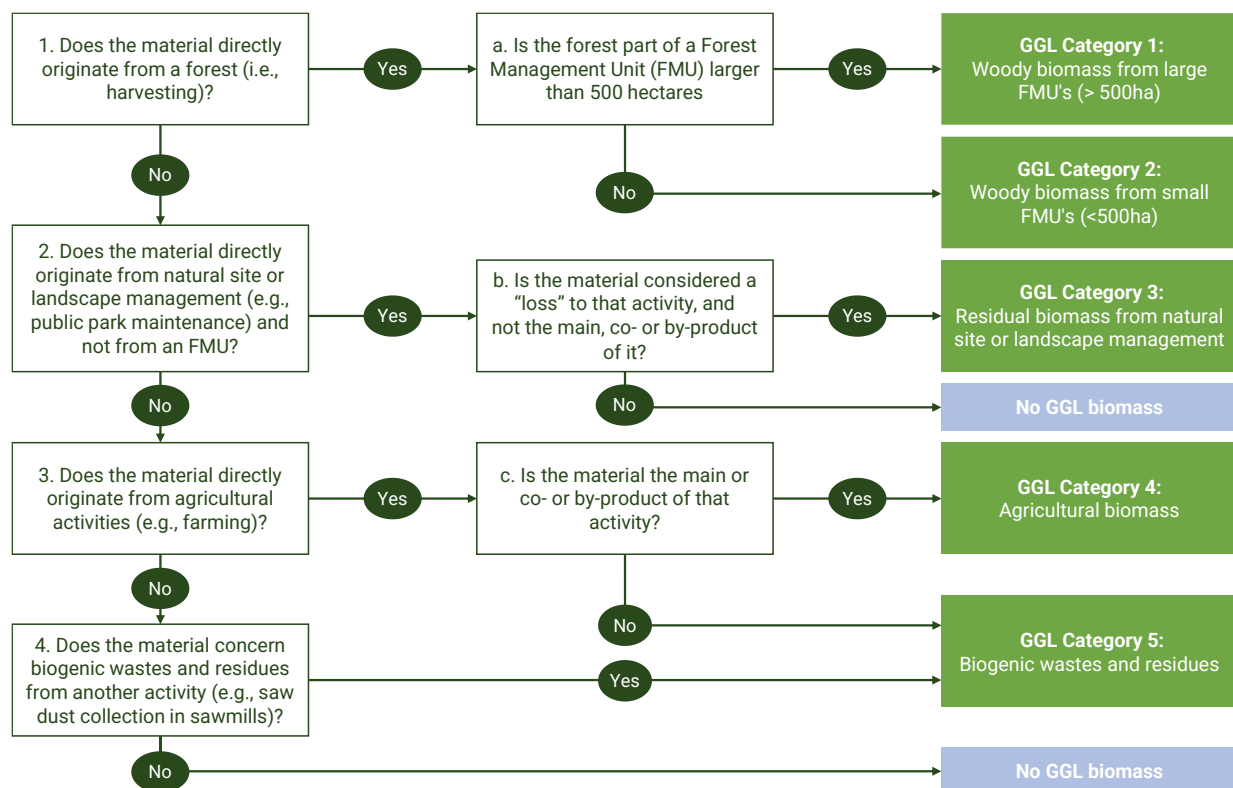


Illustration ii – allocation of biomass to GGL Categories

Note - If inputs and outputs cannot be correctly identified as meeting any of the above categories, previous (sub-)supplier(s) shall be contacted and requested to provide further evidence. Material(s) that do not meet the definition and criteria of the biomass categories shall not be used within the GGL scheme.

- 1.04 When input material is classified in one (1) GGL Category, it does not mean this material is certified as GGL Biomass. Certification requires compliance with all

applicable requirements from GGL Standards and Modules.

- 1.05 Once certified, all GGL Biomass batches have at least one GGL Scope listed as an attribute. The different scopes valid under the GGL Scheme are defined in **GGL Scope definitions**.
- 1.06 GGL Participants can perform activities within the scope of their GGL certification, in accordance with the GGL Standards for which they have been certified.
- 1.07 All GGL Participants are required to be certified against:
 - **GGLS1 – Chain of custody criteria**
 - **GGLS4 – Transaction and product certificate**

Note - The above also applies to:

- A First Collector bringing GGL Category 5 biomass (Biogenic wastes and residues) into a GGL supply chain.
 - Any Participant bringing certified material from Endorsed schemes in any GGL Category into a GGL supply chain.
- 1.08 A GGL Participant also certified for:
 - **GGLS2 – Agricultural source criteria**, may also produce or harvest material in GGL Category 4 (Agricultural biomass) as Biomass Producer,
 - **GGLS5 - Forest management criteria**, may produce or harvest material in GGL Category 1, 2 or 3 (Woody biomass from large FMUs (>500ha), from small FMUs (<500ha) or from nature or landscape management) as Biomass Producer,
 - **GGLS6 – Power company criteria**, may convert GGL Biomass into power or heat as an End-user.

This is detailed in Illustration iii below:

1 All GGL Participants and GGL Biomass shall, at all times, comply with the following GGL Standards: • GGLS1 • GGLS4						
2 For each specific regulation (e.g., RED, FIT/FIP) a GGL module with additional documents apply to all GGL Participants and GGL Biomass						
3 Depending on the GGL Category of biomass and the type of GGL Participant, the following additional GGL Standards apply:						
	GGL Category 1: Woody biomass from large FMU's (>500ha)	GGL Category 2: Woody biomass from small FMU's (<500ha)	GGL Category 3: Woody biomass from nature or landscape management	GGL Category 4: Agricultural biomass	GGL Category 5: Biogenic wastes and residues	
Biomass Producer / First Collector	GGLS5	GGLS5	GGLS5	GGLS2	-	GGL Modules: • RED: Module A • FIT/FIP: Module B • SDE+: Module C
Trader	-	-	-	-	-	
End-user	GGLS6	GGLS6	GGLS6	GGLS6	GGLS6	

Illustration iii – Applicability of GGL Modules and GGL Standards.

- 1.09 When a GGL Participant buys or sells GGL Biomass with a GGL Scope in which

that Participant has not been certified at the same time, the GGL Biomass will lose that GGL Scope attribute as a result.

Principle 2. Each GGL Participant shall have a good Quality Management System

- 2.01 Each Participant shall have a quality management system to ensure that the quantity / amount of GGL biomass material included in the GGL product flows is measured and recorded.
- 2.02 The location of a Participant shall not be listed as a prohibited location in ***GGL List of prohibited material***.
- 2.03 The quality management system shall contain documented procedures and methods covering all relevant aspects of the GGL Standards as these apply for the GGL Scope of the Participants GGL certificate.
- 2.04 In order to enable adequate tracking and tracing of the inputs and outputs, the Participant shall describe the main processing steps in appropriate detail considering the processes, the information flow and the physical biomass movement within the organisation. Procedures and instructions shall be available for the monitoring of critical control points.
- 2.05 All process documentation and procedures shall be kept up to date.
- 2.06 An internal audit shall be carried out at least annually, covering all applicable requirements from this standard and be carried out by personnel who are independent from those directly responsible for the activity on which the internal audit is to be carried out, and may be performed by subcontractors
- 2.07 The results of the internal audit shall be recorded and brought to the attention of personnel who are responsible for the area in which the internal audit is carried out. With regard to any shortcomings observed during the internal audit, corrective measures must be taken promptly. The implementation and effectiveness of the measures taken shall be verified and recorded.
- 2.08 Documented quality management system procedures shall include:
 - Storage, transportation and handling of raw materials and final (biomass) products;
 - Receipt of incoming raw materials including biomass;
 - Definition of GGL product groups;
 - Registration of quality and quantity / amount of GGL-Certified and GGL-Controlled biomass and raw materials;
 - Utilising biomass or fuels for production of energy/heat;
 - Safety procedures;
 - Mass balance and traceability;
 - Volume credit system (see Principle 8);
 - Records and registrations;
 - Purchase of biomass/materials;
 - Registration and documentation of evidence and figures used in the GHG calculations and data gathering;
 - Rightful GGL claims;
 - Outsourcing/sub-contracting;
 - Planning and carrying out internal audits.

- 2.09 If applicable, agreements with service providers relating to compliance with the GGL criteria must be in place.
- 2.10 A procedure to establish, document and implement corrective and preventive measures shall be maintained in order to avoid reoccurrence of identified non-conformities and short comings. Changes that arise from the corrective and preventive measures must be implemented and recorded.
- 2.11 Any changes in the GGL standards, Principles and Criteria shall be included in the Participants' (quality) management system.
- 2.12 In case any incorrect claims, use of labels, logos or statements have been issued by the Participant the following procedure shall be followed. The Participant shall:
 - a) Inform any involved parties of the identified non-conformity, including clients and the Certification Body within 5 working days;
 - b) Analyse the root-cause of the identified non-conformity, ensuring sufficient follow-up to avoid reoccurrence;
 - c) Cooperate with the Certification Body to resolve the identified non-conformity.
- 2.13 Participants shall meet all applicable legal requirements including those of the EUTR, EUDR and the Lacey Act. To demonstrate that EUDR requirements are being met when these apply, a Participant shall:
 - 2.13(a) have a valid EORI (Economic Operators Registration and Identification) number; and,
 - 2.13(b) have evidences that its import- and / or export-activities are validly administered in the Union Database.

Note - The EU Deforestation Regulation places requirements on companies that place amongst others, timber, soy, cocoa, coffee, oil palm, rubber and their derived products (including biomass) on the EU market. The due diligence system must include procedures, access to information, risk assessment and risk mitigation in order to meet all requirements. More information can be found here: https://environment.ec.europa.eu/topics/forests/deforestation_en

- 2.14 Participants shall provide access to relevant information to buyers if they are required to meet legal requirements.

Principle 3. Authorisations and responsibilities of all personnel involved in activities related to GGL shall be recorded

- 3.01 The responsibilities, authorisations and qualifications of all personnel who manage and carry out work related to the GGL standard requirements shall be recorded in writing. The Participant shall record the responsibility structure in an organisation chart. This also applies to temporary personnel.
- 3.02 The Participant shall establish, implement and maintain procedures and/or work instructions covering all applicable requirements of this standard, according to its scale and complexity.
- 3.03 Appropriate records shall be maintained of the experience, expertise and (required) training of the employees concerned.

- 3.04 A document-management procedure must be in place to identify the applicable revision status of documents to prevent the use of invalid and/or obsolete documents. A reference list or similar document may be used. A system must be available for updating and managing documents.
- 3.05 Management shall appoint a (management) representative who, irrespective of other responsibilities, shall have a clearly defined authority:
- To ensure that the quality management system, complying to the requirements of this standard is implemented and maintained, and;
 - To report to management on the results of the quality management system, in order to result in improvements of this system.
- 3.06 Top level management shall define and document its commitment to complying with the GGL requirements. This will include (reference to) the following:
- Ensuring that all relevant staff demonstrates awareness of the Participants procedures and competence in implementing the GGL requirements;
 - Conducting Management reviews;
 - Providing availability of necessary resources;
 - Performing internal audits.
- 3.07 A publicly available statement on its commitment shall be available.

Principle 4. Specific provisions relating to transport apply

- 4.01 Material entering the GGL system (i.e. raw, half-finished and finished materials and products) may only be transported in a manner that prevents substitution or mixing of the contents.
- 4.02 Material entering the GGL system may not originate from prohibited Points of origin listed in ***GGL List of prohibited materials***.
- 4.03 Material transported between GGL Participants (i.e. products with a GGL claim) shall be:
- transported in a manner that prevents substitution of contents with different characteristics. For instance, chips and sawdust should not be mixed during transport or storage and they shall be kept separately in the mass balance documentation (note that they could be mixed during processing, for instance to produce pellets);
 - accompanied with all relevant documents for the (GGL) chain of custody (e.g. transport documents of the actual shipment, Raw Material Statement, Transaction Certificate), proof of cleanliness for the means of transport and documents and information ensuring legal compliance in both the country of origin and its destination (e.g. EUTR, EUDR, Lacey Act see 2.13).
- 4.04 Transport documents must be available for every transport that takes place in the chain from the supplier of the raw material until the final user. The transport documents shall state at least the:
- Name and address of the Participant and the sender or receiver;
 - Name and amount / quantity of the shipped product;
 - Date of the shipment.
- 4.05 Proof of cleanliness shall be laid down, for example with a certificate of cleanliness, for every cargo hold that is designated to contain GGL-Certified or GGL-Controlled material, such as (but not restricted to):

- trucks;
- rail wagons;
- inland waterway barges;
- sea going vessels;
- containers;
- land based storage facilities.

When dedicated transport is used (i.e., transport only transporting GGL biomass), a written declaration from the transport company is sufficient. The declaration shall state that the trucks and vessels are used for the transport of material from organic origin only. The trucks must to be checked randomly. Reports of the checks have to be available upon request.

- 4.06 If applicable, proof of legal compliance (e.g. Lacey Act, EUTR, EUDR) shall be maintained for each transported GGL biomass.
- 4.07 A Transaction Certificate complying with **GGLS4 – Transaction and product certificate** is issued by an approved Certification Body for every transaction between GGL Participants with GGL Biomass, on behalf of the GGL Foundation.

Principle 5. Products entering GGL supply chains shall meet specific requirements and undergo specific procedures.

- 5.01 Upon receipt of GGL claimed products or GGL claimed raw materials the Participant shall check:
 - a) Whether the accompanying documents are correct (e.g. invoices and delivery documents);
 - b) Whether the formal GGL claims used are valid and applicable;
 - c) Whether the particulars referred to in Principle 4 have been provided;
 - d) Whether the general condition of the product meets requirements;
 - e) To what extent the quantity of the material meets declared quantities;
 - f) Whether the product is contaminated with prohibited materials listed in **GGL List of prohibited materials**.

If this inspection raises doubts whether the product involved complies with the above, then it must be segregated and not further processed. The product may not be sold or processed as GGL certified until conformity has been proven. Records of the above shall be maintained.

- 5.02 If materials are covered by a GGL Endorsed scheme or supplied by a GGL Participant as supplier, the following information shall be checked and recorded in a Raw material statement:
 - a) The name and address of the Participant;
 - b) The certificate / USI number and if applicable, the GGL Endorsed scheme name, claim and certificate number;
 - c) Validity and scope of Participant's certificate;
 - d) If applicable any checks of online databases regarding the Participant's certificate.
- 5.03 All incoming materials covered by the Participants GGL system shall comply with, and registered as, the following two formal GGL claims:
 - **GGL-Certified;**
 - **GGL-Controlled.**

5.04 **GGL-Certified** input is material:

- Sourced under a GGL Endorsed scheme which qualifies as GGL-Certified equivalent and corresponding claim(s) as defined in the specific GGL Module, and received with a Raw Material Statement. Note: requirement 2.13 from this standard also applies;
- Non-endorsed wood sourced from FMU's (GGL Category 1 or 2; see 1.01 below), received with a Raw Material Statement and meeting all requirements of **GGLS5 – Forest management criteria**; or,
- Agricultural residual material (GGL Category 4; see 1.01 below) received with a Raw Material Statement and meeting all requirements of **GGLS2 – Agricultural source criteria**; or,
- Biogenic/recycled wastes and residues (GGL Category 5; see 1.01 below) received with a Raw Material Statement.

5.05 **GGL-Controlled** input is material:

- Sourced under an GGL Endorsed scheme which qualifies as GGL-Controlled equivalent and corresponding claim(s) as defined in the specific GGL Module, and received with a Raw Material Statement; or,
- Non-endorsed wood sourced from FMU's (GGL Category 1 or 2; see 1.01 below), received with a Raw Material Statement that complies with this standard as well as specific principles from **GGLS5 – Forest management criteria**, being:
 - Principle 2.01 on sites with High conservation value;
 - Principle 2.03 on conversion of natural forests;
 - Principle 7 on land with high biodiversity value;
 - Principle 8 on land with high carbon stock;
 - Principle 9 on mitigation of long-term carbon debt;
 - Principle 10 on labour rights; and,
 - Principle 11 on health and safety.

A Raw Material Statement shall be signed by the supplier(s) as well as the receiving GGL Participant; or,

- Residual products from natural site and landscape management (GGL Category 3; see 1.01 below) received with a Raw Material Statement that complies with this standard as well as specific principles from **GGLS5 – Forest management criteria**, being:
 - Principle 2.01 on sites with High conservation value;
 - Principle 2.03 on conversion of natural forests;
 - Principle 7 on land with high biodiversity value;
 - Principle 8 on land with high carbon stock;
 - Principle 9 on mitigation of long-term carbon debt;
 - Principle 10 on labour rights; and,
 - Principle 11 on health and safety.

A Raw Material Statement shall be signed by the supplier(s) as well as the receiving GGL Participant.

Note - For clarity: GGL-Controlled biomass can only be from GGL Categories 1, 2 or 3. GGL Categories 1 or 2 biomass can be GGL-Certified woody biomass. GGL



Category 3 biomass can only have the GGL-Controlled claim.

- 5.06 The Participant shall identify GGL material that meets criteria from 5.04, as **GGL-Certified**.
- 5.07 The Participant shall identify GGL material that meets criteria from 5.05, as **GGL-Controlled**.
- 5.08 The Participant shall monitor and register the volumes of GGL material supplied (incoming). In case the amount of material supplied deviates from the amount stated in the statement and invoices, the Participant shall verify this deviation with the supplier and record it.
- 5.09 All material delivered to a Participant shall be provided with a Raw Material Statement as per the applicable GGL Module, describing the material by:
 - One of the GGL Categories 1 through 5,
 - Its certification under an Endorsed scheme and certificate number, when applicable,
 - Its name and species,
 - Its country of origin and geolocation, and
 - Other applicable attributes per GGL Module

Note 1 - All suppliers of residues and wastes shall sign the Raw Material Statement in order to identify the original producer of the (residual) materials and ensure that the GGL definitions and requirements are met.

The following requirements 5.10 through 5.13 only apply when certification against **GGLS5 – Forest management criteria** for biomass in GGL Categories 1, 2 or 3, and **GGLS2 – Agricultural source criteria** for biomass in GGL Category 4, takes place by a GGL Participant.

- 5.10 The Raw Material Statement shall be used to verify compliance against the relevant requirements from the **GGLS5 – Forest management criteria** and **GGLS2 – agricultural source criteria** by both the Participant and the Certification Body. Any legal owners (including sub-suppliers) of the material shall sign the Raw Material Statement (or separate statements) in order to identify the full supply chain and to prove/ensure that materials covered by the Raw Material Statement meet the GGL criteria. All relevant evidence shall be requested from suppliers if there is any doubt whether the material meets the applicable GGL criteria.
- 5.11 Verification by the Participant against **GGLS5 – Forest management criteria** and **GGLS2 – Agricultural source criteria** requirements, shall take place prior to selling the material as GGL-Certified or GGL-Controlled (as the case may be) and must meet the following requirements:
 - a) Verification shall be carried out at FMU-/supplier- level for each FMU/supplier included in the scope;
 - b) Verification shall be reported and documented adequately in order to allow its results to be reproduced by third parties;
 - c) Scope of the verification shall be clearly defined as relevant to the applicable deliveries and origin (e.g. which FMU, supply area, suppliers, etc.);
 - d) Results and evidence of the verification shall be available to the Certification Body upon request;

- e) Verification shall be carried out by qualified and experienced personnel, relevant to the scope of the verification. This also applies if any part of the verification against the GGL Standards is outsourced to a third party. Evidence of relevant qualifications and experience by either the Participants personnel or a sub-contractor shall be documented and be available upon request;
 - f) Relevant stakeholders and experts for the verification shall be consulted at least 6 weeks prior to the verification taking place;
 - g) Verification must be carried out covering the full supply chain including the forest management unit and/or agricultural supply unit of origin.
 - h) Identified non-conformities, risk mitigation and corrective actions resulting from the verification shall be clearly recorded and documented.
- 5.12 Verification against criteria from **GGLS5 – Forest management criteria** and **GGLS2 – Agricultural Source** shall be repeated every 12 months upon continued or repeated deliveries from the same forest management unit or agricultural supply unit.
- 5.13 Any non-conformities or well-funded complaints/allegations regarding the forest management unit or any part of the supply chain shall be investigated within 2 months of identifying the non-conformity or receiving the complaint/allegation. The Certification Body shall be informed within this deadline.

Principle 6. GGL supply chains shall meet administrative requirements regarding their outputs

- 6.01 Each Participant shall ensure that:
- a) (Raw) material source, origin, nature and quantities supplied to the Participant and delivered product that has left the unit/facility is traceable.
 - b) All biomass mentioned under 6.01 a) is checked for additives and substances for manufacturing and the composition of the prepared GGL material.
 - c) The status of GGL-Certified and GGL-Controlled biomass of incoming and outgoing material/product is tracked.
- 6.02 The Participant shall keep records of the nature, quantities, origins and/or destinations (including name, address and certificate numbers of the buyers concerned and the dates of delivery) of all products received, delivered and sold.
- 6.03 The Participant shall keep records of the GGL related information on shipments. This includes the Transaction Certificate and also the Raw Material Statements (when applicable).
- 6.04 There are two formal GGL claims: GGL-Certified and GGL-Controlled as defined in 5.04 and 5.05 above, respectively. These claims shall be used when communicating the claim to third parties (i.e. clients).
- 6.05 The Participants' invoices for GGL biomass shall contain at least:
- a) The formal GGL claim(s) per identified product/material as: either GGL-Certified, or GGL-Controlled
 - b) Reference to a GGL Transaction Certificate and regulatory module that applies per GGL Scope
 - c) Name and contact details of the Participant
 - d) Information necessary to identify the buyer including name and address
 - e) Document date

- f) Quantities
- 6.06 Results of checks, measurements, sampling and inspections shall be recorded and filed. The records must show clearly who has performed the inspections and tests and their accreditation. Analyses must be performed by an ISO 17025 accredited laboratory, unless approval for a different laboratory is obtained from the GGL Board.
- 6.07 Records and documents relating to all aspects of the GGL system (including all GGL standards as well as the GGL File) must be maintained for at least 5 years, including but not limited to:
- Sales
 - Purchase
 - Production
 - Deliveries (incoming and outgoing)
 - Transaction Certificates
 - GGL Scope
 - GHG data
 - Annual summaries
 - Complaints and non-conforming products
 - Suppliers
 - Outsourcing/sub-contracting
 - Verification evidence against **GGLS5 – Forest management criteria** and **GGLS2 – Agricultural source criteria** as applicable

Principle 7. Raw material or GGL biomass shall be controlled in a manner that meets specific requirements during its processing

- 7.01 All raw materials and all products, before, during and after the processing must be traceable back to their origin and identified. Where a risk of pollution with foreign material (or non- GGL-Certified / -Controlled material) or mixing with products polluted with foreign materials is identified, this risk shall be specified and documented.
- 7.02 No additives may be used that are prohibited by GGL, as defined in **GGL List of prohibited materials**.
- 7.03 Different batches of GGL Biomass with different Modules within their GGL Scope, as defined in **GGL Scope definitions**, cannot be mixed. For example, GGL Biomass with Scope “FIT/FIP – Category 5” cannot be mixed with GGL Biomass with Scope “SDE+ - Category 5”. If these are still mixed, both batches will lose their certification.
- 7.04 Different batches of GGL Biomass with different Categories of Biomass but using the same Module, as defined in **GGL Scope definitions**, can be mixed and their Categories accumulate. For example, GGL Biomass with Scope “FIT/FIP – Category 5” can be mixed with GGL Biomass with Scope “FIT/FIP - Category 1”. When combined, the new mix will have the Scope “FIT/FIP – Category 1, 5”.
- 7.05 When (semi-finished) products or raw materials are processed, handled or stored that contain prohibited contents:
- a) These non-complying materials must be stored separately (prior to and after processing);

- b) A batch of non-complying materials must be processed at once and without interruptions and be separated physically, or separated in time, from equivalent treatments relating to non-certified (polluted) and non-eligible products.
- c) Measures must be taken to ensure identification of the batch and to avoid contamination with products, which have not been obtained in accordance with the GGL standards.
- d) Processing and storage must be organized and executed in such way that pollution with non-vegetable materials or prohibited materials is prevented.
- 7.06 Transport used for GGL-Certified or GGL-Controlled material shall be clean to avoid mixture or contamination with products that have not been obtained in accordance with the GGL standards.
- 7.07 Specifications of raw materials or (semi-finished) products that undergo processing, shall be recorded and made available to relevant personnel.
- 7.08 Any external storage shall be considered a part of the facility, and procedures and requirements applicable to the facility shall also apply to the storage. In case a Participant makes use of an external storage facility, the Participant shall demonstrably ensure that the external storage facility complies in full with all applicable requirements of criteria 7.02, 7.06 and Principle 9. The Participant shall in such cases include the requirements in an agreement with the manager of the facility or its legal representative, for example in a contract.
- 7.09 Any outsourced activities shall be covered by an outsourcing agreement to ensure that the sub-contractor is aware of all responsibilities and procedures regarding GGL-Certified or GGL-Controlled materials and must cover:
 - a) mutual responsibilities
 - b) segregation requirements for GGL-Certified and GGL-Controlled materials, and for materials with non-overlapping GGL Scopes
 - c) verification and checks of incoming materials covered by the agreement
 - d) the right for the Certification Body to conduct audits if deemed necessary
 - e) any procedures and training required to carry out the outsourced activities as defined in this standard
 - f) the obligation that GGL claims, labels and logos are not to be applied in any way by the sub-contractor who is not a GGL Participant himself
 - g) all other requirements that would apply to the GGL Participant as per **GGLS1 – Chain of Custody criteria** himself, in case he would not have outsourced any activity.

Principle 8. Mass-balance across GGL supply-chains is warranted by the GGL Volume credit system.

- 8.01 GGL-Certified materials may only be mixed with GGL- Controlled materials from GGL Categories 1, 2 or 3 if these materials comply with criterion 2.13, Principle 8, Principle 9, Principle 10 and Principle 10 of this standard. After mixing, the materials can only carry the GGL-Controlled claim.
- 8.02 Only when GGL Biomass is physically mixed, that biomass can become part of a single mass balance for which the Volume credit system can be used. The Volume credit system allows trading from the mass balance using characteristics from some of the GGL Biomass that were mixed in the mass

balance, ensuring that in no case the sum of characteristics of all GGL Biomass in the mass balance is changed.

- 8.03 GGL Biomass with different, non-overlapping regulatory Modules amongst its GGL Scopes can never be mixed. After mixing, the mass balance of GGL Biomass will lose all GGL Scopes with different regulations that do not match across all inputs into the mix for mass balance.
- 8.04 GGL Biomass can never be physically mixed with non-certified material.
- 8.05 A physical mix of different categories of GGL Biomass, shall be identifiable with a single description of the product mix.

Note - For example: if batch #1 of GGL Biomass with more than regulation in its GGL Scopes (e.g., RED and also FIT/FIP) is mixed with batch #2 GGL Biomass that has one regulation in its GGL Scope (e.g., FIT/FIP) that matches batch #1, batch #1 will lose the other (RED) GGL Scopes after mixing.

- 8.06 The Volume credit system allows allocation of the following characteristics across mass balance:
 - GHG emissions data,
 - GGL claims, and
 - GGL Category of biomass
- 8.07 Specific GGL Modules set more stringent requirements on mixing of biomass and the Volume credit system (e.g., **Instruction A.0 – RED Module** in Section J).
- 8.08 The corresponding characteristics, claims and quantities of the material shall be the same after application of the conversion factor. It shall be ensured that mixed outputs can be traced to individual inputs.
- 8.09 The claim period shall be specified with a maximum of 12 months. During this period all inputs and outputs are recorded for the specified period.
- 8.10 It shall be ensured that within the specified claim period the quantities of the material having the same characteristics of inputs, after application of the conversion factor, are corresponding with the output products.
- 8.11 For each product group a GGL credit account shall be maintained in which added and deducted credit/volumes are recorded based on the supplied claims according to criteria 5.07.
- 8.12 Added credits shall meet the requirements of criteria 5.04 and 5.05. The applicable output claim shall be GGL-Certified and/or GGL-Controlled based on the proportion of input claims.
- 8.13 The Participant shall ensure that credits from the account can never be overdrawn.
- 8.14 The volume credit system shall be applied at the level of single physical site.
- 8.15 The volume credit system shall be audited annually by the Certification Body, and the Participant shall make all relevant data, records, and documents readily available at the annual audit. The physical stocks still present at the end of one period with GGL-Certified or GGL-Controlled status, may be carried over to the next period with that same status.

Principle 9. Staff employed and facilities and equipment used by GGL
Participants shall meet wellbeing, health, safety and cleanliness standards.

- 9.01 A procedure for HR processes, such as recruitment, trainings, retirement and contract termination is in place.
- 9.02 Wages shall meet or exceed minimum industry or national standards or other recognized wage agreements, such as agreed by the local community.
- 9.03 It shall be ensured that the principles and rights at work as defined in the ILO “Declaration on Fundamental Principles and Rights at Work” (1998) are maintained and complied with, including that:
 - a) Freedom of association and the right to collective bargaining are respected for all workers of the operation;
 - b) All forms of forced or compulsory labour are eliminated;
 - c) All forms of child labour are eliminated; and
 - d) All forms of discrimination in respect of employment and occupation are eliminated.
- 9.04 The facility and its equipment must be designed and operated in such a way to ensure full compliance with the applicable legislation regarding environmental principles, practices and safety.
- 9.05 Measures must be taken in the processing facilities and its equipment to avoid injuries to personnel (including contractors). Dust and hazardous fumes must be extracted from the working space and filtered before release.
- 9.06 Occupational health and safety shall be a demonstrable concern of the Participant and regular evaluation shall be performed.
- 9.07 Health and safety procedures shall be documented, maintained and implemented. Personnel shall be trained and appropriate safety measures taken.
- 9.08 A safety plan shall be documented, monitored and implemented. The plan shall include safety issues and feasible deadlines for implementation.
- 9.09 Personal protection equipment shall be made available for all personnel by the Participant and a registration of issued safety equipment shall be kept up to date.

Principle 10. Transaction Certificates shall report energy and GHG data

- 10.01 All material received with a GGL claim (GGL-Certified or GGL-Controlled) must be accompanied by a valid GGL Transaction Certificate or GGL Product Certificate per ***GGSL 4 – Transaction and product certificate***.
- 10.02 For all material covered by a GGL Transaction Certificate the Trader or End-user of GGL- Certified and GGL-Controlled material shall register at least:
 - a) the name, address, location and legal representative of the Trader, Biomass Producer or First Collector delivering the shipment;
 - b) the name, address, location, GGL Scope and legal status of the Biomass Producer or First Collector;
 - c) any information relating to the requirement under 2.13 above;
 - d) the certificate number of the trader delivering the material;
 - e) the Transaction Certificate number of the batch;
 - f) the GGL Scope(s) of the material;

- g) the gross and net mass (or its equivalent calorific content) as stated on the Transaction Certificate;
 - h) total emissions associated with the GGL Biomass (E) as stated on the Transaction Certificate reflecting all emissions (E) incurred until the moment that the Trader or End-user assumes ownership of the GGL biomass (e.g., as defined in the sales documents' Incoterms);
 - i) the transport documents of the shipment; and
 - j) the Load Compartment Inspection (LCI) report belonging to the shipment.
- 10.03 For outputs at least the following information shall be registered:
- a) the name, address, location and legal representative of the Biomass Producer, First Collector or Trader who have supplied the GGL biomass;
 - b) the name, address, location, GGL Scope and legal representative of the Trader or End-user to whom they have supplied the biomass;
 - c) the **GGSL4 – Transaction and product certificate** number under which the batch is sold;
 - d) the GGL Scope(s) of the material;
 - e) the gross mass (or its equivalent calorific content) as stated on the Transaction Certificate;
 - f) the net mass as stated on the Transaction Certificate;
 - g) total emissions associated with the GGL Biomass (E) as stated on the incoming Transaction Certificate as well as all emissions associated with the GGL Biomass under his ownership, reflecting all emissions (E) up until and including the moment of his next sale of the GGL biomass to a buyer; and
 - h) the Transaction Certificate numbers of the batches that are part of the outgoing batch.
- 10.04 An outgoing batch may contain material from several batches covered by a GGL Transaction Certificate but may not contain any material that is not covered by a GGL Transaction Certificate. An outgoing batch under a GGL Transaction Certificate may not contain any material that does not comply with clause 2.13 of this standard when applicable.
- 10.05 The accumulated total amount of outgoing material originating from a batch as covered by an incoming Transaction Certificate number may not exceed the net amount of material as registered on that Transaction or Product Certificate. Similarly, the accumulated calculated total emissions of the GGL Biomass (E) in outgoing material originating from a batch as covered by an incoming Transaction Certificate number may not be less than the total emissions of the GGL Biomass (E) as registered on that Transaction or Product Certificate.
- 10.06 The GGL scheme makes use of upstream GHG verification. This means that GGL Participants receiving biomass, have the responsibility to administer and report GHG emissions for all of the upstream supply chain activities that have taken place prior to their receipt and ownership of GGL biomass.

Note 1 - This upstream administration requirement of GHG emissions, places responsibility with the receiver of GGL Biomass and incentivizes him to collect all GHG emission data from any previous supplier or seller.

Note 2 – The precise moment of change in ownership of GGL Biomass is dictated by the terms of the sales agreement, e.g., the Incoterms of a transaction involving

shipment overseas.

10.07 The value for E to be claimed on an outgoing Transaction or Product Certificate cumulates all prior transactions and shall be calculated as follows, unless defined differently in the specific GGL Module:

10.08
$$E_b = (R.E_1 \times A_1) + (R.E_2 \times A_2) + \dots + (R.E_n \times A_n)$$

Where:

- E_b = calculated emissions from the use of the fuel in this batch
- $R.E_1$ = emissions value E per MT or MJ calculated as E stated on the preceding Transaction Certificate divided by its net mass in MT or MJ as stated on the preceding Transaction Certificate of batch 1
- A_1 = amount of material used from batch 1 in MT or MJ
- $R.E_2$ = emissions value E per MT or MJ calculated as E stated on the preceding Transaction Certificate divided by its net mass in MT or MJ as stated on the preceding Transaction Certificate of batch 2
- A_2 = amount of material used from batch 2 in MT or MJ
- $R.E_n$ = emissions value E per MT or MJ calculated as E stated on the preceding Transaction Certificate divided by its net mass in MT or MJ as stated on the preceding Transaction Certificate of batch n
- A_n = amount of material used from batch n in MT or MJ

Note 1: GHG emission values are to be calculated and listed in units as per applicable GGL Module. For the avoidance of doubt and for example: RED requires calculations as per **Instruction A.4 – RED GHG Emissions**.

Note 2: batches can be quantified either in weight (MT) or in calorific content (MJ).

- 10.11 The Biomass Producer shall collect all necessary information to calculate the accumulated total greenhouse gas emissions (E) of the product starting with the growing of the crop and relevant forest management activities up until and including the energy used in the producing and storage of the product.
- 10.12 Every following party in the GGL supply-chain is obliged to calculate the accumulated total greenhouse gas emission (E) at the point of delivery, by taking the accumulated total greenhouse gas emissions (E) of the received product and as stated on the Transaction Certificate, increased with the greenhouse gas emissions (E) since receipt (e.g. energy from storage, transport).
- 10.13 Each batch of GGL-Certified or GGL-Controlled material shall be provided with all relevant GHG and energy data required to carry out the GHG calculations and shall be based on a reference period of 12 months prior to production of that specific batch. Every step in the supply chain must be included as relevant to the specific batches that are sourced and/or sold as GGL-Certified and GGL-Controlled.