EUROPEAN SUSTAINABLE FOOD COALITION

ESFC Environmental Assessment Certification Scheme

(EmpCo)

Version 0.4.1-draft-vv
Date 2026-07-14

> **Under stakeholder consultation.** This is a draft published for review by the ESFC EmpCo Working Group. As of v0.4.0-draft-vv the conformity-assessment route is rebuilt on ISO/IEC 17029 + ISO 14065 (with ISO 14067 product scope) via the Regulation (EC) No 765/2008 accreditation mechanism, replacing the earlier ISO/IEC 17065 model; the normative floor in §1.4.1 is unchanged and remains open for Working Group consultation under the GOV-02 process. Legal-foundation work (competition-law opinion, DG-JUST enquiry, DAkkS pre-inquiry) is in progress; legal statements herein are the scheme owner's position and are not legal advice.

Designed to support preparation for compliance with
EU Directive 2024/825 (Empowering Consumers)
Enforcement date: 27 September 2026

This document compiles the complete EmpCo scheme documentation:
12 Scheme Documents – 4 Governance Documents – 3 VVB Documents – 2 Technical Annexes

Table of Contents

Contents

About this Scheme

The **ESFC EmpCo Certification Scheme** is owned and maintained by the **European Sustainable Food Coalition (ESFC)** (esf-coalition.org). The scheme defines requirements for food-product environmental assessment systems seeking validation, verification, and label licensing as a third-party verification scheme under EU Directive 2024/825 (Empowering Consumers Directive).

Relationship to provider pathways. The framework is methodology- and provider-neutral. One example pathway — operated by Eaternity AG (Zurich, Switzerland) under the pathway ID `eaternity-eos` — is documented in the provider pathway annex appended to this volume. References to EOS (calculation engine), EDB (ingredient database), Eaternity Score, and Eaternity Gastro in the example pathway describe that specific pathway only; the framework itself does not privilege any provider.

Scheme vs. implementation. The scheme is methodology- and provider-neutral: any environmental assessment system conforming to the requirements set out in this document — LCA methodology, data requirements, assessment process, QA outcome requirements, rating and claim criteria, change management, and governance — may be validated and licensed under EmpCo. Multiple providers may hold label licences concurrently; each submits a provider pathway annex following the canonical template at `provider-pathways/TEMPLATE.md`. Annexed to this volume is one example pathway; others may follow the same structure.

Contact. All scheme-level correspondence (compliance, stakeholder consultation, complaints, appeals) is directed to ESFC at the addresses given in Sections 10 and GOV-02.

PART I

Scheme Documents

EmpCo-01 through EmpCo-12

1. Scope

Document: EmpCo-01 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1.1 Purpose

This document defines the scope of the ESFC EmpCo Certification Scheme — a methodology-neutral framework for certifying environmental claims on food and beverage products in the EU under Directive 2024/825 (EmpCo / Empowering Consumers).

The scheme is owned and governed by the European Sustainable Food Coalition (ESFC). ESFC publishes the rulebook and defines the requirements; certification and monitoring are carried out by independent, ISO/IEC 17029 + ISO 14065 accredited validation/verification bodies (VVBs) with ISO 14067 product scope. ESFC does not act as the certifier itself.

1.2 What the Scheme Certifies

The scheme operates with **two certification levels**:

1.2.1 Provider-Level Certification

A *provider* is an organisation that operates a calculation system used to produce environmental assessments of food products (e.g. a software platform with an underlying methodology, database, calculation engine, and quality assurance process).

Provider-level certification assesses whether the provider's system is sufficiently controlled and auditable to support claims under EmpCo. The provider submits a **provider pathway annex** following the canonical structure in `provider-pathways/TEMPLATE.md`, which the VVB evaluates against this scheme. The annex covers, at minimum:

- The methodological basis used for the claim, including the LCIA method (the scheme requires EF 3.1 — see Annex D)
- The main data sources (LCI databases, primary data sources)
- The calculation and quality-control process
- Treatment of missing data and gap-filling logic
- Version control and audit trail
- Compliance with framework-level requirements (QA outcomes, evidence file structure, change management) — see `provider-pathways/README.md` for the framework/pathway split

The output of provider-level certification is a **validated provider pathway** listed in the public verification infrastructure.

Provider-level certification is a **systemic, up-front review of the calculation system done once per pathway**: the methodology, data sources, calculation engine, gap-filling logic, functional unit, and rating-shape derivation are assessed as a system before any claim is certified. The purpose is explicitly *not* to re-establish the scientific validity of the methodology at every individual claim, but to confirm once that the system is sound and that it reliably and reproducibly applies its documented methodology. This is what makes the scheme tractable at food-sector scale: with the calculation system reviewed up front, per-claim verification reduces to a **data-flow check** — tracing a sample of real primary inputs through the already-reviewed system to its outputs — rather than a re-investigation of the methodology on every claim. A scheme that deferred methodology review to claim time could not scale to the hundreds of thousands of product claims and millions of recipe-level claims the food sector requires.

1.2.2 Trader-Level Certification

A *trader* is a retailer, brand, or food service operator that uses a validated provider pathway to make environmental claims on its products, menus, or in its communications.

Trader-level certification assesses whether the trader uses a validated pathway correctly, including:

- Claim wording and display rules (Section 8)
- Evidence availability for the verified claim scope
- Public disclosures (per Section 1.5.2)
- Internal controls and update processes
- Complaint handling

The trader's binding to the scheme is provider-mediated in every case: the validated provider's customer terms incorporate the EmpCo pass-through clauses (Annex G), and traders making on-pack or shelf claims are additionally bound by the surface covenants (label licence, packaging correction timelines, supplier evidence chain). The assurance level of the underlying assessment (Enhanced or Standard, see Section 6.2) is a data-intake and QA property chosen by the trader — no claim surface requires a particular level. Two equivalent contractual forms exist for the binding:

Contractual form	**Typical use**	**Mechanism**
Schedule within the provider's standard customer terms (default)	All traders, any claim surface — menu, on-pack, shelf, marketing	The provider's terms incorporate the EmpCo pass-through clauses (Annex G); by accepting them the trader agrees to comply with applicable scheme rules (claim wording, sampling consent, complaint cooperation, register and status disclosure, termination authority). Traders making on-pack or shelf claims are additionally bound

Contractual form	Typical use	Mechanism
		by the surface schedule (on-pack covenants — label licence, packaging correction timelines, supplier evidence chain); a trader ordering the **Enhanced Assurance option** records that order individually and is individually listed in the public verification portal (Section 1.5.2). All traders are recorded in the provider's trader register — status confirmed to any person on request — and are subject to sample-based verification of their claims by the VVB through the provider.
Individually negotiated licence agreement	Traders requiring bespoke commercial	Incorporates the EmpCo pass-through clauses (Annex G) and, for on-pack

Contractual form	Typical use	Mechanism
	terms (typically brands or retailers); or, where the provider does not offer trader licensing, with the scheme's Certification Committee directly	and shelf claims, the same surface covenants, with individually recorded acceptance. Equivalent to the schedule form under this scheme.

A validated provider does not automatically make every claim by every trader compliant. The provider-level certification confirms eligibility of the calculation system; trader-level certification confirms correct use of the validated pathway in the market and is enforced through the trader's binding, regardless of the claim surface or assurance level.

The architecture follows established product-certification practice for schemes with downstream end-users (see e.g. the MSC Consumer-Facing Organisation standard and the Fairtrade National Fairtrade Organisation licensee model), where the validation/verification body's contractual relationship is with the label-licence holder (the provider) and downstream binding is mediated through the provider's contracts with traders.

1.2.3 What Is Not Certified at the Product Level

The scheme is system-based, risk-based, and sample-based. It does not require every individual product, recipe, or menu item to be certified. Instead, validation/verification bodies assess the provider's calculation system and the trader's claim-use controls, then review selected product examples or claim files based on defined sampling rules, risk criteria, and corrective-action procedures.

This is consistent with the certification model used by comparable system-level schemes (MSC for fishery management, Rainforest Alliance for farm management, ISO 9001 for quality management).

1.2.4 Self-Managed Pathway

A trader with internal LCA capability may act as **its own provider**: it registers a pathway annex, undergoes the same validation, carries the same provider-side duties (trader register — here trivially itself —, evidence file, change management, regression evidence), and receives its label licence on the same conditions. The scheme knows one pathway model; "self-managed" is a role assignment, not a separate track.

1.2.5 Transition Registration (Intent to Certify)

A trader actively working toward licensed claim use that cannot complete it before 27 September 2026 may register its **intent to certify** with the scheme owner (directly or via a provider acting on its behalf). The registration records the engaged provider (or self-managed status), the claim scope, and a target date; it is limited to **2 months, extendable once by 2 months**, and is **never consumer-facing**.

Directive (EU) 2024/825 provides **no transition period**: non-compliant sustainability labels must be off commercial communications from 27 September 2026 (Commission Q&A, June 2026 version). A transition registration therefore confers **no claim or label rights whatsoever**. Its sole function is documentation: national authorities may take into account whether traders have made reasonable and proportionate efforts to comply, taking due account of proportionality, legal certainty and legitimate expectations (Commission Q&A; CPC Network Common Understanding on "old stock" situations). A dated registration, together with the practical old-stock measures the Commission names (covering or correcting claims by stickers, supplementary information at the point of sale), is evidence of such efforts. The registration is not legal advice and no enforcement outcome is warranted.

1.2.6 Hybrid Provider–Trader Pathway

A trader that uses a validated provider's methodology as the basis for a **trader-branded label** with additional bespoke methodology elements may seek validation under a **hybrid pathway**: Layer 1 and the shared Layer 2 elements are covered by the provider's existing validation and are not repeated at trader level; trader-level review covers **only** the elements specific to the trader's own label methodology; the hybrid validation depends on the continued validity of the underlying provider validation — if that lapses or is suspended, the trader notifies the VVB and either engages an alternative validated provider or undergoes independent Layer 1/Layer 2 review. Available under both assurance levels; trader-branded display remains subject to all of Section 8.

1.3 What the Scheme Does Not Prescribe

To ensure neutrality between providers and to avoid premature dependency on any one technology stack, the scheme does **not** prescribe:

- A specific calculation engine or software tool
- A specific LCI database (Agribalyse, Ecoinvent, proprietary databases, or custom databases may all be used, subject to provider-pathway certification)
- A specific gap-filling logic (provider-defined and audit-trail documented)
- A specific QA delivery method (expert review, validated automated pipeline, or hybrid; what matters is meeting the QA outcome requirements)

The scheme prescribes a normative floor (Section 1.4) — including LCIA method (EF 3.1), functional unit (DFU), and rating system (A–E) — and lets validated pathways operate above it on the dimensions in §1.4.3.

1.4 Scheme Floor (Normative Requirements for Any Pathway)

The scheme defines a normative floor that any validated provider pathway shall meet. The floor items in §1.4.1 (functional unit, rating system, system boundary, cut-off, evidence file, QA outcomes, change management) are **uniformly mandatory**; the LCIA method moved to the pathway-declared dimensions under an AR6-generation guardrail on 2026-08-04 (§1.4.3) across pathways to keep the scheme auditable under EmpCo Article r(iii) and to give consumers a consistent basis for cross-pathway comparison. Other dimensions (LCI database, calculation engine, gap-filling logic, QA delivery method) are provider-declared with full freedom.

The methodology can evolve. Any change to the items in §1.4.1 is a **major** scheme change requiring stakeholder consultation per EmpCo-GOV-02.

A validated provider pathway shall meet, at minimum:

1.4.1 Uniformly mandatory

- **System boundary:** Cradle-to-grave, per ISO 14040:2006 / ISO 14044:2006+Amd
- **Cut-off criteria:** Per ISO 14044 and PEF guidelines (≤ 1% mass/energy contribution may be excluded; ≤ 5% cumulative excluded across any impact category)
- **LCIA method (climate change): EF 3.1** with fossil / biogenic / LULUC / total sub-indicators (built on IPCC AR6 GWP100 characterisation factors). Aligns with EU PEF and the Green Claims Directive proposal. See Annex D. IPCC AR5 GWP100 is not accepted; pathways previously characterised under AR5 transition to EF 3.1 before pathway certification.
- **Functional unit: Daily Food Unit (DFU)** — a nutrition-aware functional unit defined as the 5-component average of protein/50, fat/66, energy_kJ/6000, water/2500, dry_weight/600. A pathway may **additionally** express results per kg, per kg edible, or per serving alongside the DFU value; the DFU is the unit on which the A–E rating is assigned and on which cross-pathway comparison is performed. See Section 4.3. The DFU formula is itself part of the §1.4.1 floor; revisions go through GOV-02 stakeholder consultation.
- **Rating system: A–E letter grades** (five-band categorical, with simplified A/B/E permitted for indicators where five bands are not meaningful, e.g. animal welfare, deforestation risk). The pathway publishes its A–E thresholds, derivation rationale, benchmark or reference dataset, update process, and borderline-handling rules (see Section 4.5). Five-band A–E is required because EU 2024/825 requires consumer-interpretable claims and a single rating shape across pathways supports cross-pathway comparability.
- **Required disclosures:** Claim scope, method version, LCI database used, validation/verification body, label licence ID, complaint contact (Section 1.5)
- **Permissible vs. prohibited claim wording:** As specified in Section 8
- **Required evidence file structure:** As specified in Section 6.5
- **Quality assurance outcome requirements:** Accuracy, reproducibility, completeness, traceability, outlier detection (see Section 7.4)
- **Change management process:** Three-tier classification with materiality threshold and regression testing (see Section 12)

1.4.2 Claim type — scope and roadmap

The September 2026 EmpCo release covers **Climate impact only**. A pathway may operationally support other indicators (water scarcity, nutritional quality, animal welfare, deforestation risk) and document them in its annex; those indicators are not in the certified market-use scope of EmpCo until the scheme formally adds them. Adding a claim type to the in-scope list is a major scheme change requiring stakeholder consultation and ESFC member approval.

Indicator	Sept 2026 status
Climate impact	In scope (mandatory minimum for every pathway)
Water scarcity	Operationally supported by some pathways; not in EmpCo-certified scope
Nutritional quality	Same
Animal welfare	Same
Deforestation risk	Same

1.4.3 Provider-declared with full freedom

For the following dimensions the framework imposes no menu — the pathway declares its choice and the VVB audits it for correctness, conservatism, and conformance with the rest of the floor:

- **LCI (background) database:** Agribalyse, Ecoinvent, or any other provider-declared LCI database
- **Calculation engine:** Open-source, proprietary, or hybrid; matrix-based, graph-based, or other
- **Gap-filling logic:** Provider-defined, calibrated against PEFCRs and published LCA data, with audit trail in the evidence file
- **QA delivery method:** Expert review, validated automated pipeline, or hybrid (provided the QA outcome requirements in Section 7.4 are met)

1.5 Public Verification Infrastructure

The scheme maintains a public transparency portal (for example the provider-operated disclosure portal at empco.eaternity.org) that publishes information about validated pathways and the traders using them. The disclosed fields differ by assurance level:

1.5.1 Per-pathway disclosures (always public)

For each validated provider pathway, the portal publishes:

- Provider name and pathway version
- LCIA method and version (Section 1.4)
- LCI database(s) used
- Validation/verification body and licence ID
- Date of validation, last verification, and next re-validation (renewal)
- Complaint contact and access to the complaint procedure (Section 10)
- Change log for the pathway
- **Regression test summary for each release** (per Section 12.5.5), including materiality outcomes per input case and pass/fail status

1.5.2 Per-trader disclosures (tiered by listing basis)

Trader type	**Public listing**
Traders with the Enhanced Assurance option (per-product intake ordered per Section 6.2; the order records the listing consent)	Full per-trader entry: trader name, verified claim scope, label li-

Trader type	Public listing
	cence ID, validity dates, link to provider pathway.
All other traders (Standard Assurance, any claim surface — including on-pack and shelf claims)	**No public listing required.** The provider maintains a complete internal trader register (Annex G, Section G.2.4), disclosed in full on request to

Trader type	Public listing
	the VVB, the Certification Committee, ESFC, and competent authorities. The portal publishes aggregate register statistics per provider and offers **status confirmation on**

Trader type	Public listing request
	— any person may ask whether a named trader's claims are backed by a validated pathway, answered without undue delay; this status confirmation is the designed verifiability

Trader type	Public listing
	ity route for on-pack and shelf claims made at Standard Assurance. Traders may opt in to an individual public entry.

For the September 2026 release, the public verification infrastructure can be operated manually for a small number of pilot pathways and Enhanced Assurance traders. The Standard Assurance trader register is automated from the provider's customer database; status confirmation may be handled manually via the portal's verification contact. Automation of QR-code generation and product-level searchable databases may be added later as claim volumes justify.

1.6 Sample-Based Verification

In addition to the system audit, the VVB conducts annual sample-based verification of individual claims under each validated pathway:

- **Sample size:** Risk-based and random sampling per the VVB's documented procedure, with minima defined in Section 11
- **Risk criteria:** New product categories, high gap-filling rates, complaints, borderline cases, new traders, new enterprise data integrations
- **Verification scope:** Input data accuracy, correct application of the validated pathway, calculation correctness, claim wording compliance

See Section 11 for detailed sampling procedures.

1.7 Applicability

This certification scheme applies to:

- **Food products** sold to consumers in the EU and assessed under a validated provider pathway, including packaged food, fresh produce, prepared meals, and retail product portfolios assessed via enterprise data integration
- **Recipes and menus** in food service settings, including individual dish ratings and daily/monthly sustainability reports
- **All consumer communication channels**, including product packaging, restaurant menus, digital displays, QR codes, retail shelf labels, and sustainability reports
- **All geographic markets** where verified claims are used for consumer communication
- **All participating company types**, including food manufacturers, retailers, and food service operators

For the September 2026 pilot release, the scope is narrowed by the *Claim type* module (Section 1.4.2) to **climate impact only**. Pathways may operationally support other indicators (water, nutrition, animal welfare, deforestation), but those indicators are not yet in the certified market-use scope of EmpCo until the scheme adds them as a major change subject to ESFC member approval.

1.8 Change Management

Each validated provider pathway maintains a validated change management process for updates to its calculation engine, database, and gap-filling logic. This ensures that routine software improvements can proceed without requiring ad-hoc re-validation (renewal), while providing the VVB with appropriate oversight of changes that could affect assessment accuracy.

Changes are classified into three tiers:

Tier	VVB Involvement
Non-substantive (no impact on assessment outputs)	Notification only
Minor (impact below materiality threshold)	VVB notified; reviewed at next annual surveillance
Major (impact above materiality threshold or structural change)	VVB approval required before deployment

The complete change management process, including materiality threshold definition, regression test requirements, and emergency change procedures, is specified in Section 12.

1.9 Transition to a Globally Aligned Reference Methodology

Once a globally aligned methodology for food and beverage product impact assessment becomes available, has been reviewed for scientific robustness and practical implementation, and has been formally adopted by ESFC members through the coalition's decision-making process, that methodology shall become the long-term reference methodology for the scheme. Certified provider pathways will transition to it within a period defined by ESFC at that time.

The interim methodology-neutral framework defined in this document is therefore designed to support EmpCo readiness from 27 September 2026 while preserving the path to methodological alignment.

1.10 Exclusions

This scheme does not cover:

- Environmental claims made by traders outside the scope of a validated provider pathway
- Carbon offset programmes or carbon neutrality claims
- Supply chain certifications (e.g. organic, Fairtrade) — these may be recognised as input data but are not themselves certified by this scheme
- Non-food products
- A consumer-facing ESFC label (planned as a separate, later workstream)

1.11 Normative References

The normative references underpinning this scheme are specified in Section 2.

2. Normative References

Document: EmpCo-02 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

2.1 Purpose

This document lists the standards, guidelines, and regulatory frameworks that are normative for the ESFC EmpCo Certification Scheme.

2.2 LCA Standards

2.2.1 ISO 14040:2006

Environmental management — Life cycle assessment — Principles and framework

Defines the principles and framework for conducting Life Cycle Assessments, including goal and scope definition, system boundaries, and functional unit selection. The validated provider's methodology follows this standard as the foundation for all environmental impact assessments.

2.2.2 ISO 14044:2006 + Amd 1:2017 + Amd 2:2020

Environmental management — Life cycle assessment — Requirements and guidelines

Specifies requirements and provides guidance for Life Cycle Assessment, including life cycle inventory analysis, life cycle impact assessment, and interpretation. This standard governs the detailed technical execution of validated pathway LCA calculations.

2.2.3 ISO 14067:2018

Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

Provides principles, requirements, and guidelines for the quantification of the carbon footprint of products. any validated pathway's climate-impact rating methodology aligns with this standard for product-level and recipe-level GHG accounting across both assurance levels.

2.3 Product Carbon Footprint Standards

2.3.1 PAS 2050:2011

Specification for the assessment of the life cycle greenhouse gas emissions of goods and services

Published by the British Standards Institution (BSI). Specifies requirements for assessing product-level GHG emissions using a 100-year global warming potential (GWP100) and economic allocation for co-products.

2.3.2 GHG Protocol Product Life Cycle Accounting and Reporting Standard (2011)

Published by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). Provides requirements and guidance for product-level GHG inventories, including Scope 1, 2, and 3 emissions categorisation, primary data prioritisation, and uncertainty quantification.

2.4 EU Frameworks

2.4.1 Environmental Footprint (EF) 3.1 Method

Andreasi Bassi, S., Biganzoli, F., Ferrara, N. et al. (2023). Updated characterisation and normalisation factors for the Environmental Footprint 3.1 method. JRC Technical Report JRC130796. Publications Office of the European Union. DOI: 10.2760/798894.

The European Commission's official LCIA methodology, maintained by the Joint Research Centre (JRC) as the technical basis of the Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) frameworks. Climate-change characterisation factors in EF 3.1 are based on **IPCC AR6 (2021)** GWP100 values and split climate change into fossil, biogenic, LULUC, and total sub-indicators. EmpCo adopts EF 3.1 as the normative LCIA method for the climate-impact rating and related GHG indicators (see Annex D).

EF reference package: eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml

2.4.2 Product Environmental Footprint (PEF) Methodology

European Commission methodology for measuring and communicating environmental performance throughout product lifecycles. Multi-indicator environmental assessment covering 16 impact categories characterised via EF 3.1 (Section 2.4.1). EmpCo uses PEF methodological guidance and Product Environmental Footprint Category Rules (PEFCRs) to calibrate Gap-Filling Modules.

2.4.3 EU Directive 2024/825 (Empowering Consumers Directive)

Directive amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information. Enforcement date: 27 September 2026.

This certification scheme is specifically designed to satisfy the requirements of Article r. Both assurance levels (Enhanced and Standard) are covered under the same system certification:

Requirement	Implementation
(r)(i) Open access to the scheme	See EmpCo-GOV-01 Open Access Policy
(r)(ii) Stakeholder consultation	See EmpCo-GOV-02 Stakeholder Consultation
(r)(iii) Non-compliance and remedial procedures	See EmpCo-09 Non-Compliance, EmpCo-10 Complaints and Appeals
(r)(iv) Independent third-party verification	See EmpCo-VVB-01 through VVB-03, EmpCo-11 Surveillance

2.4.4 Corporate Sustainability Reporting Directive (CSRD)

EU directive requiring companies to report on sustainability performance. Validated-pathway data supports CSRD compliance by providing Scope 3 environmental data, standardised sustainability metrics, and documentation for external audits.

2.5 Validation and Verification Standards

The scheme's third-party conformity assessment is built on the ISO validation/verification stack. The validation/verification body (VVB) shall be accredited to ISO/IEC 17029 + ISO 14065 with ISO 14067

product scope by a national accreditation body operating under Regulation (EC) No 765/2008 (Section 2.4.4). Detailed VVB requirements are specified in EmpCo-VVB-01.

2.5.1 ISO/IEC 17029:2019

Conformity assessment — General principles and requirements for validation and verification bodies

The accreditation framework for the validation/verification body (VVB). Specifies general principles and requirements for the competence, consistent operation, and impartiality of bodies performing validation and verification as conformity-assessment activities. This is the body-level standard of the scheme, replacing ISO/IEC 17065.

2.5.2 ISO 14065:2020

General principles and requirements for bodies validating and verifying environmental information

The environmental specialisation of ISO/IEC 17029 — the requirements under which VVBs are accredited for the validation and verification of environmental information, including GHG statements. Accreditation to ISO/IEC 17029 + ISO 14065 with ISO 14067 product scope is the accreditation profile required of a VVB under this scheme.

2.5.3 ISO 14064-3:2019

Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

The engagement-level process standard: how each validation and verification engagement under this scheme is planned, evidenced, and concluded — including engagement planning, risk assessment, materiality, evidence-gathering, level of assurance (limited or reasonable), and the form of validation and verification statements.

2.5.4 ISO 14066:2023

Environmental information — Competence requirements for teams validating and verifying environmental information

Specifies competence requirements for validation and verification engagement teams. Governs the composition and competencies of the VVB's engagement teams under this scheme (see EmpCo-VVB-02).

2.5.5 ISO/IEC 17011:2017

Conformity assessment — Requirements for accreditation bodies accrediting conformity assessment bodies

Specifies the requirements an accreditation body meets when accrediting conformity-assessment bodies. Under EmpCo the accreditation chain is: a national accreditation body operating to ISO/IEC 17011 under Regulation (EC) No 765/2008 (e.g. DAkkS) accredits a validation/verification body to ISO/IEC 17029 + ISO 14065 with ISO 14067 product scope (§2.5.1–§2.5.2), and that VVB validates provider pathways and verifies live market claims under this scheme. This chain is what makes an EmpCo validation statement, verification statement, and label licence independently traceable to a recognised accreditation system, as EmpCo Article r(iv) requires.

Note (non-normative) — ISO/IEC 17065 upgrade path. *The ISO/IEC 17029 accreditation chain above is standalone-sufficient for criterion (iv). Should a binding legal clarification or accreditation-*

body scope availability later make an ISO/IEC 17065 anchor preferable, the scheme can add a 17065 certificate as a superstructure that reuses the accredited VVB's validation and verification statements as the evaluation input (evaluation outsourcing under ISO/IEC 17065), without repeating verification work. See `docs/17065-upgrade-path.md`.

2.6 Impact Assessment

2.6.1 Climate Change — LCIA Method

The LCIA method for climate-change characterisation is pathway-declared under the AR6-generation guardrail (Section 1.4.3, since 2026-08-04). The scheme's published reference factor set under EmpCo v0.5.9-draft-vv is **EF 3.1 climate change** (built on IPCC AR6 GWP100, with fossil / biogenic / LULUC / total sub-indicators), declared by the first pathway. See Annex D.

Underlying IPCC AR6 (2021) GWP100 values applied through EF 3.1:

Gas	**GWP100 (IPCC AR6)**
CO_2 (fossil)	1
CO_2 (biogenic)	0
CH_4 (fossil)	29.8
CH_4 (biogenic)	27.0
N_2O	273
HFCs	Varies (see Annex D)

EF 3.1 layers EU PEF reporting rules and sub-indicator structure (fossil / biogenic / LULUC / total) on top of these AR6 values.

The reporting floor is EF 3.1. All certified results are characterised and reported under EF 3.1 (IPCC AR6 GWP100). IPCC AR5 GWP100 is not accepted as a *reporting* method, and pathways previously characterised under AR5 shall transition to EF 3.1 before pathway certification. The change from IPCC AR5 to EF 3.1 was introduced in scheme version 0.3.3-draft; v0.3.5-draft introduced a transitional menu including IPCC AR6 raw, which was consolidated to EF 3.1 only in v0.3.6-draft.

Input-data layer — AR5-era and literature-sourced data are admissible when re-characterised. A separate question is the provenance of the underlying inventory and emission-factor data, which for many food products draws on peer-reviewed literature whose characterisation vintage the provider does not control. Such AR5-era or literature-sourced input data are admissible *provided* the pathway re-characterises them to EF 3.1 before reporting and flags their provenance in the evidence file (see Annex D, Section D.6). This keeps the reporting floor firm (everything is reported under EF 3.1) while not excluding otherwise-valid source studies for which an AR6-native restatement is unavailable — the distinction is between the *reporting* method (fixed: EF 3.1) and the *input* data provenance (admissible when re-characterised and flagged).

2.6.2 AWARE Method

Available WAter REmaining — Used for water scarcity footprint characterisation as recommended by WULCA and aligned with PEF methodology.

2.7 Data Sources

This section lists the standard LCI data sources; the data-quality tiers and indicators that govern their use are specified in Annex C.

2.7.1 Standard LCI Database

Background LCA data source providing life cycle inventory data for materials, energy, transport, and waste treatment processes. Ecoinvent and Agribalyse (Section 2.7.2) are the standard databases used.

2.7.2 Agribalyse

French agricultural LCA database providing environmental data for food and agricultural products, used as a complementary data source.

2.8 Internal References

2.8.1 Validated Change Management Process

The change management process for updates to a validated pathway's calculation engine, ingredient database, and gap-filling logic is specified in Section 12. This process governs how changes to the calculation system are classified, tested, and deployed in coordination with the VVB.

2.9 Applicability

Where the documents listed above are dated references, only the edition cited applies. Where undated references are listed, the latest edition of the referenced document applies.

In case of conflict between the requirements of this certification scheme and the normative references, the requirements of this scheme take precedence for the purposes of certification.

3. Terms and Definitions

Document: EmpCo-03 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

3.1 Purpose

This document defines terms used throughout the ESFC EmpCo Certification Scheme.

3.2 General Terms

Assessment

Systematic evaluation of a food product's or recipe's environmental impact using Life Cycle Assessment methodology under a validated provider pathway. An assessment may be conducted at Enhanced or Standard Assurance level.

Assurance Level

The level of data completeness, quality assurance rigour, and verification applied to an environmental assessment, chosen by the participating company for the assessment; no claim surface requires a particular level (Section 8.2.2). This scheme defines two assurance levels: Enhanced Assurance and Standard Assurance.

Enhanced Assurance

The assurance level requiring complete primary data and either expert review or a validated automated pipeline meeting enhanced accuracy thresholds. Data may be collected via supplier questionnaire or via enterprise data integration (see Section 6.2; pathway-specific implementation declared in PA-04). Available for any claim surface; activated only by the participating company's express order or logged acceptance. ESFC Working-Group documents call the **binding mode** of this level "individual" (per-trader binding and listing); "Enhanced" names the assurance depth, "individual" the binding mechanism — the tier is the same.

Standard Assurance

The assurance level requiring minimum data (ingredient names and quantities) with gap-filling permitted, and automated validation meeting standard accuracy thresholds. Suitable for menu labels, operational sustainability reporting, and guest communication. ESFC Working-Group documents call the **binding mode** of this level "collective" (provider-mediated binding via standard customer terms); "Standard" names the assurance depth, "collective" the binding mechanism — the tier is the same.

Validation/Verification Body (VVB)

Independent organisation accredited to ISO/IEC 17029 + ISO 14065 with ISO 14067 product scope, via the Regulation (EC) No 765/2008 mechanism, contracted to validate provider pathways and verify live claims under EmpCo, concluding validation and verification statements. Also referred to as "the VVB" throughout this scheme. The VVB is the scheme's **conformity assessment body (CAB)** in the sense of Regulation (EC) No 765/2008 — ESFC Working-Group documents use "Conformity Assessment Body" for the same actor; the terms are equivalent.

Certification Scheme

The set of normative documents, procedures, and requirements defined in this repository, against which provider pathways and trader claim use are certified.

Participating Company

Any food producer, retailer, food service operator, or other entity that submits data for assessment and uses EmpCo environmental ratings on its products, menus, or in its communications. Participating companies choose their assurance level based on their intended claims.

Scheme Owner

The **European Sustainable Food Coalition (ESFC)** — the organisation that develops, maintains, and governs this certification scheme. Contact: esf-coalition.org.

Reference Implementer

Removed in v0.3.4-draft. The pre-rework v0.3.3 scheme defined "Reference Implementer" as a glossary term with a single named example. The framework now treats every provider as a peer and removes this term. See instead the **Provider** and **Provider Pathway** terms in this section.

3.3 Technical Terms

CO_2 Equivalent (CO_2eq)

A metric measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Cradle-to-Grave

System boundary encompassing all stages of a product's life cycle, from raw material extraction (cradle) through production, distribution, use, and end-of-life disposal (grave).

Cut-Off Criteria

Rules for excluding inputs and outputs from an LCA that are below a defined threshold of significance. Under ISO 14044 and PEF: flows contributing less than 1% of mass, energy, or environmental significance, with cumulative exclusions not exceeding 5%.

Daily Food Unit (DFU)

a standardised functional unit normalising a food portion against one day's nutritional requirements of a reference adult across five dimensions: protein (50 g), fat (66 g), rest energy (6,000 kJ), water (2,500 g), dry weight (mass − water, 600 g) — as operated. One DFU corresponds to one day of food. A revision is announced (WHO/FAO 2,000-kcal/60-kg frame; rest energy 5,076 kJ; macro-stripped dry matter /325 g); open-source reference implementation: `lci-dfu` (gitlab.com/eos-lci/lci-dfu).

Ingredient Database (LCI Database)

A scientific database containing environmental impact (Life Cycle Inventory) data for food ingredients, processing steps, origins, and supply chain parameters. Examples include Agribalyse (open-source),

Ecoinvent (commercial), and provider-specific databases. The choice of LCI database is part of the validated provider pathway documentation (see PA-04).

Calculation Engine

The software platform operated by a validated provider that implements the LCA methodology, queries the LCI database, runs calculations, and produces environmental impact results. The choice of calculation engine is part of the validated provider pathway documentation (see PA-05). Changes to a certified calculation engine are governed by the validated change management process (see Section 12).

Functional Unit

Quantified performance of a product system for use as a reference unit in LCA (per ISO 14040). Under EmpCo the functional unit is the Daily Food Unit (DFU); see Section 4.3. A pathway may additionally express results per kg, per kg edible, or per serving alongside DFU; the A–E rating is assigned on the DFU.

Gap-Filling Module

Software module within a certified calculation engine that provides scientifically defensible estimates for data points where primary data is not available, using proxy data, modelling, or conservative defaults. Each provider pathway documents its gap-filling logic.

Global Warming Potential (GWP)

A factor describing the radiative forcing impact of one unit of a given greenhouse gas relative to one unit of CO_2 over a specified time horizon (typically 100 years, GWP100).

Life Cycle Assessment (LCA)

Systematic analysis of the potential environmental impacts of products or services during their entire life cycle, from raw material extraction through production, use, and disposal (ISO 14040/14044).

Life Cycle Inventory (LCI)

Phase of LCA involving the compilation and quantification of inputs (resources, energy) and outputs (emissions, waste) for a product throughout its life cycle.

Recipe Assessment

An environmental assessment of a food service recipe (dish). A recipe assessment takes ingredient names and quantities as input and produces A–E ratings and CO_2eq/DFU values as output. Typically conducted at Standard Assurance.

Menu Assessment

The collective environmental assessment of all recipes offered by a food service operation over a defined period. Menu assessments aggregate individual recipe assessments to produce operational-level sustainability metrics, daily reports, and monthly reports.

Automated Assessment

An environmental assessment conducted entirely by a pathway's calculation engine without manual expert review, using the automated gap-filling pipeline for ingredient matching, origin assignment,

processing estimation, transport calculation, and impact assessment. Used for Standard Assurance and, where a validated automated pipeline is in place, for Enhanced Assurance (including assessments delivered via enterprise data integration).

POS/ERP Integration

The automated connection between a participating company's Point-of-Sale (POS) or Enterprise Resource Planning (ERP) system and the validated provider's platform, enabling product or recipe data (ingredient names, quantities, and optionally origins and production methods) to be transferred directly for assessment.

Enterprise Data Integration

A mode of data intake where a participating company's enterprise systems (ERP, procurement, product lifecycle management) provide data meeting Enhanced Assurance completeness requirements through automated interfaces rather than manual questionnaires. Enterprise data integration must be validated by the VVB before assessments delivered through it qualify for Enhanced Assurance claims. The pathway documents its enterprise-integration validation procedure in PA-05 of its annex; framework-level VVB validation requirements are summarised in Section 6.2.

Validated Automated Pipeline

An automated assessment pipeline that has been demonstrated to meet Enhanced Assurance accuracy thresholds (±10% of reference values) and validated by the VVB. A validated automated pipeline may deliver Enhanced Assurance assessments without mandatory per-assessment expert review, provided the pipeline validation remains current and is confirmed at each annual surveillance audit. The pathway's QA delivery method is declared in PA-07 of its annex; framework-level requirements are in Section 7.3 and Section 7.4.

Ingredient Matching (Automated)

The process by which the validated provider's automated pipeline maps an ingredient name from a recipe to the corresponding entry in the certified ingredient database. Automated matching uses text matching, synonym resolution, and classification algorithms. Match quality is classified in tiers:

Tier	Description	Example
1	Exact match (product, origin, method)	"Tomato, organic, Spain" matched to ingredient-database entry
2	High-confidence match (product identified, origin/method inferred)	"Cherry tomatoes" matched with gap-filling module-assigned origin
3	Category match (product category identified, specifics estimated)	"Mixed salad" matched to composite ingredient-database entries
4	Low-confidence match (best-effort, flagged for review)	Unusual ingredient matched by text similarity

3.4 Change Management Terms

Change Classification

The process of categorising a proposed change to the validated pathway (calculation engine, ingredient database, or gap-filling logic) into one of three tiers (non-substantive, minor, major) based on its potential impact on assessment outputs. See Section 12.

Non-Substantive Change

A change to the validated pathway (calculation engine, ingredient database, or gap-filling logic) that has no impact on assessment outputs. Examples: UI changes, documentation updates, internal refactoring, performance optimisation. Requires notification to the VVB only.

Minor Change

A change to the validated pathway (calculation engine, ingredient database, or gap-filling logic) with impact below the materiality threshold. Examples: database updates, gap-filling module parameter tuning, new ingredient additions. VVB is notified and reviews the change at the next annual surveillance.

Major Change

A change to the validated pathway (calculation engine, ingredient database, or gap-filling logic) with impact above the materiality threshold or that constitutes a structural change. Examples: new impact category, methodology change, threshold recalibration, new gap-filling category. Requires VVB approval before deployment.

Materiality Threshold

The quantitative criteria for determining whether a change is minor or major. A change is material if it causes a rating category change for more than 2% of assessed items in the regression test suite, OR a greater than 10% change in CO_2eq/DFU for more than 5% of assessed items.

Regression Test Suite

A reference dataset maintained by each validated provider against which every release of that provider's pathway is tested. The framework defines composition, maintenance, test-execution, retention, and deterministic-generation requirements (Section 12.5). The actual suite size, structure, case names, and counts are declared in PA-07.1 of the pathway annex (see `provider-pathways/TEMPLATE.md`).

Validated Change Management Process

The formal process governing how changes to a validated pathway's calculation engine, ingredient database, and gap-filling logic are classified, tested, reviewed, and deployed. See Section 12.

3.5 Rating Terms

Rating

A letter grade (A through E) assigned to a food product or recipe based on its environmental performance relative to benchmarks. A is best, E is worst. The same rating thresholds apply regardless of assurance level.

Rating Threshold

The numerical boundary value that separates one rating grade from the next. See Section 4 and Annex A.

Benchmark

A reference value representing average environmental impact, calculated from representative consumption data. Used as the baseline against which individual products are rated.

Climate-Impact Rating

The A–E rating assigned for total greenhouse-gas emissions (CO_2eq) per Daily Food Unit, characterised under EF 3.1 (built on IPCC AR6 GWP100 with fossil / biogenic / LULUC sub-indicators). The threshold values that delimit A through E are declared by each validated provider pathway in PA-09 (alongside the benchmark dataset and derivation rationale) and audited by the VVB. Climate-impact claims are the only claim type in EmpCo scope for the September 2026 release.

Other Indicators (out of EmpCo scope, pathway-operational only)

A validated provider pathway may operationally support additional indicators (e.g. water scarcity, nutritional quality, animal welfare, deforestation risk) and document them in its annex. These indicators are not in the certified market-use scope of EmpCo until the scheme adds them as a major change subject to ESFC member approval (see Section 1.4.2).

Rating Metrics

The standardised metric data produced by a validated pathway's assessment: the A–E rating category, the absolute environmental impact values (e.g. CO_2eq per DFU), and the percentage comparison to the benchmark where applicable. Rating metrics are the normative output of the certified system and must be accurately communicated regardless of visual presentation format. The visual design used to display rating metrics is outside the scope of this scheme, provided it does not contradict the metric meaning.

3.6 Process Terms

Audit

Systematic, independent, and documented examination of a validated provider pathway, of a trader's claim use, or of a sample of assessments by the VVB.

Surveillance Audit

Annual audit conducted by the VVB between certification and re-validation (renewal) to verify ongoing conformity. Includes a standing change management review.

Sample-Based Verification

The VVB's examination of a representative selection of individual assessments at both assurance levels to verify the accuracy of the certified system's outputs.

Non-Conformity

Failure to meet a requirement of this certification scheme. Classified as minor, major, or critical. See Section 9.

Corrective Action

Action taken to eliminate the cause of a detected non-conformity and prevent its recurrence.

3.7 Abbreviations

Abbreviation	Meaning
AWARE	Available WAter REmaining
VVB	Validation/Verification Body
CO_2eq	Carbon Dioxide Equivalent
CSRD	Corporate Sustainability Reporting Directive
DFU	Daily Food Unit
EmpCo	EmpCo Certification Scheme (ESFC)
EmpCo	Empowering Consumers Directive (EU 2024/825)
ERP	Enterprise Resource Planning
gap-filling module	Gap-Filling Module
GHG	Greenhouse Gas
GWP	Global Warming Potential
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
PEF	Product Environmental Footprint
POS	Point of Sale
PEFCR	Product Environmental Footprint Category Rules
QA	Quality Assurance

4. Rating and Claim Criteria

Document: EmpCo-04 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

4.1 Purpose

This document specifies what a validated provider pathway shall publish and what an EmpCo-compliant claim shall contain. The scheme floor is defined in Section 1.4 — functional unit (DFU) and A–E rating system are uniformly mandatory; the LCIA method is pathway-declared under the AR6-generation guardrail (Section 1.4.3). The pathway declares its A–E thresholds, benchmark, derivation rationale, and provider-specific implementation details via PA-09 (Declared Choices) of the pathway annex template.

4.2 Claim Types and Indicators

The September 2026 EmpCo release covers **Climate impact only**. A pathway may operationally support other indicators (water, nutrition, animal welfare, deforestation) and document them in its annex, but those indicators are not in the certified market-use scope of EmpCo until the scheme adds them as a major change subject to ESFC member approval.

Claim type	Indicator	Unit	Sept 2026 status
Climate impact	Total greenhouse-gas emissions per EF 3.1 (Section 4.4)	kg CO_2eq per declared functional unit	**In scope**
Water scarcity	Water consumption weighted by regional scarcity (AWARE)	m^3 world-eq per declared FU	Out of EmpCo scope
Nutritional quality	Nutritional-quality indicator	Provider-defined (declared)	Out of EmpCo scope
Animal welfare	Categorical assessment of welfare standards	Provider-defined (declared)	Out of EmpCo scope
Deforestation risk	Deforestation-risk assessment	Provider-defined (declared)	Out of EmpCo scope

4.3 Functional Unit

The functional unit is the **Daily Food Unit (DFU)**, defined as the 5-component average:

```
DFU = (g_protein/50 + g_fat/66 + (kJ_energy − 17·g_protein − 37·g_fat)/6000 + g_water/2500 + g_dry_weight/600) / 5
```

As operated: one DFU corresponds to one day's food intake of a reference adult; divisors protein 50 g, fat 66 g, rest energy 6,000 kJ, water 2,500 g, dry weight (mass − water) 600 g. **Planned revision (announced):** a consistent WHO/FAO 2,000-kcal / 60-kg reference frame (rest energy 5,076 kJ; macro-stripped dry matter, denominator 325 g); open-source reference implementation `lci-dfu` (https://gitlab.com/eos-lci/lci-dfu). Adoption is change-managed with benchmark/threshold re-baselining in the same step; pathways declare the unit as operated.

A pathway may **additionally** express results per kg, per kg edible, or per serving — those alternative expressions are informational. The DFU is the unit on which the A–E rating is assigned and on which cross-pathway comparisons are valid. The DFU was selected because:

- A per-kg unit is misleading across food categories (1 kg lettuce vs. 1 kg beef serve different nutritional purposes)
- A per-serving unit is too operator-dependent for cross-product comparison
- The DFU normalises impact to a comparable nutritional basis, enabling fair comparison across food categories

The DFU formula is part of the §1.4.1 normative floor; revisions go through GOV-02 stakeholder consultation. The pathway annex (PA-04) documents the pathway's implementation of the DFU calculation.

4.4 Climate Impact Claims

For the September 2026 release, the scheme requires that climate claims:

- Quantify total greenhouse-gas emissions across the entire product life cycle (cradle-to-grave per ISO 14040/14044, with cut-off criteria per ISO 14044 / PEF)
- Use **EF 3.1 climate change** (built on IPCC AR6 GWP100, with fossil / biogenic / LULUC / total sub-indicators) — see Annex D
- State the functional unit (Section 4.3)
- Report the EF 3.1 sub-indicators (fossil, biogenic, LULUC) separately when any contributes more than 5% of the total, per EU PEF reporting rules

4.5 Rating System

Every validated provider pathway operates an **A–E letter-grade rating system** for the climate-impact claim, per Section 1.4.1. Five-band A–E may be simplified to a three-band A/B/E presentation for indicators where five bands are not meaningful (e.g. animal welfare, deforestation risk).

A pathway operating an A–E rating system shall publish, per PA-09:

1. The A–E thresholds (numeric ranges) per indicator, in the same units as the claim
2. The derivation rationale for the thresholds (e.g. percentile of a benchmark dataset, science-based target, expert judgement)
3. The benchmark or reference dataset used to derive the thresholds, including geographic and temporal scope
4. How thresholds are reviewed and updated
5. How borderline cases are handled (Section 4.6)
6. How the system meets the uncertainty requirement (Section 4.7)

Different pathways may declare different thresholds. The VVB audits the declared thresholds for internal consistency, scientific defensibility, and alignment with the pathway's benchmark dataset.

A future scheme release may move toward harmonised A–E thresholds once a globally aligned methodology is available.

4.6 Borderline Cases

Where a pathway operates a rating system, products scoring near a rating threshold are flagged for enhanced review during QA. Enhanced sensitivity analysis is performed and borderline assessments are logged for VVB sampling priority. The VVB pays particular attention to borderline cases during sample-based verification.

4.7 Uncertainty

A rating system shall be designed so that typical data uncertainties (see Annex C) do not routinely change a product's rating category. Threshold intervals shall be wide enough to absorb normal measurement and modelling uncertainty, including the broader uncertainty ranges typical of assessments with higher gap-filling rates. The provider pathway documentation shall describe how this is achieved.

5. Methodology

Document: EmpCo-05 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

5.1 Purpose

This document specifies the methodology requirements that any validated provider pathway shall meet. It defines the floor of methodological consistency across pathways. Implementation details (specific calculation engines, gap-filling algorithms, and rating aggregation logic) are documented in each provider's pathway submission.

5.2 Life Cycle Assessment Approach

Certified provider pathways use LCA methodology in accordance with ISO 14040:2006 and ISO 14044:2006+Amd to evaluate environmental impacts across all stages of a food product's life cycle.

5.2.1 Goal

To quantify the environmental impact of food products across multiple indicators (climate, water, nutrition, animal welfare, rainforest conservation), enabling comparative assessment via the A–E rating system.

5.2.2 Scope

- **System boundary:** Cradle-to-grave
- **Functional unit:** Daily Food Unit (DFU) — see Section 5.3
- **Impact categories:** Climate change (EF 3.1) is the only EmpCo-scope indicator for Sept 2026; pathways may operationally additionally compute water scarcity, nutritional quality, animal welfare, or deforestation risk for their own purposes (out of EmpCo scope, see §1.4.2)
- **Geographic scope:** Global, with region-specific data where available
- **Temporal scope:** Annualised data; database updated with latest available scientific data

5.3 Functional Unit: Daily Food Unit (DFU)

The Daily Food Unit is a standardised functional unit representing one day's food intake of a reference adult, normalised across five dimensions. The open-source reference implementation is the `lci-dfu` package (gitlab.com/eos-lci/lci-dfu). A revision of the reference frame is announced (WHO/FAO 2,000 kcal / 60 kg; rest energy 5,076 kJ; macro-stripped dry matter, 325 g divisor); pathways declare the unit as operated, and adoption is change-managed with benchmark/threshold re-baselining.

5.3.1 Nutritional Dimensions

Nutrient	Daily Reference Target (divisor)
Proteins	50 g
Fats	66 g
Rest energy (after protein and fat)	6,000 kJ (as operated; the announced revision moves to 5,076 kJ on a consistent 2,000-kcal frame)
Water	2,500 g

Nutrient	Daily Reference Target (divisor)
Dry weight (mass − water)	600 g (as operated; the announced revision uses macro-stripped dry matter, 325 g)

5.3.2 Calculation Formula

```
DFU = (protein_ratio + fat_ratio + energy_ratio + water_ratio + dry_weight_ratio) / 5
```

Where:

- `protein_ratio = g_protein / 50`
- `fat_ratio = g_fat / 66`
- `energy_ratio = (kJ_energy - 17 * g_protein - 37 * g_fat) / 6000`
- `water_ratio = g_water / 2500`
- `dry_weight_ratio = g_dry_weight / 600`

The energy component uses kilojoules (kJ). The coefficients 17 and 37 represent the energy content per gram of protein and fat in kJ, respectively. The 6,000 kJ divisor represents the daily carbohydrate energy requirement after subtracting energy from proteins and fats.

5.3.3 Rationale

Different foods provide different nutritional value. Comparing environmental impacts per kilogram would be misleading (e.g. 1 kg lettuce vs. 1 kg beef serve entirely different nutritional purposes). The DFU normalises impacts to a comparable nutritional basis, enabling fair comparison across food categories.

5.4 System Boundaries

5.4.1 Included Life Cycle Stages

Agricultural Production (Cradle)

- Land use and land use change (including deforestation)
- Fertiliser production and application
- Pesticide manufacturing and use
- Irrigation water consumption
- On-farm energy use
- Livestock methane and manure emissions
- Soil carbon changes

Processing and Manufacturing

- Ingredient transport to facility
- Manufacturing energy (electricity, gas, steam)
- Process water consumption and wastewater treatment
- Refrigeration and climate control
- Waste management
- Co-product allocation

Packaging

- Raw material extraction (oil, minerals, wood)
- Packaging material production
- Printing and labelling

- Transport of packaging to manufacturer

Distribution

- Finished product transport
- Mode-specific emissions (truck, ship, rail, air)
- Refrigerated vs. ambient transport
- Warehouse storage and last-mile delivery

Retail and Consumer Phase

- Retail refrigeration/freezing
- Consumer shopping transport
- Home storage (refrigerator, freezer, pantry)
- Cooking and preparation
- Food waste

End of Life (Grave)

- Packaging recycling, landfill, incineration
- Food waste disposal
- Methane from organic waste decomposition

5.4.2 Cut-Off Criteria

Following ISO 14044 and PEF guidelines:

- **Mass criterion:** Flows contributing less than 1% of total mass may be excluded
- **Energy criterion:** Flows contributing less than 1% of total energy inputs may be excluded
- **Environmental significance:** Flows contributing less than 1% of any impact category may be excluded
- **Cumulative limit:** Total excluded flows shall not exceed 5% of any impact category (per PEF requirements)

Systematically excluded flows: minor administrative activities, employee commuting, capital goods depreciation where data quality is insufficient.

5.5 Impact Assessment

5.5.1 Global Warming Potential (GWP100)

CO_2 equivalents are calculated using the **Environmental Footprint (EF) 3.1** method (climate change category), whose GWP100 values are based on **IPCC AR6 (2021)**. EF 3.1 reports climate change as four sub-indicators: fossil, biogenic, LULUC, and total (see Annex D).

```
CO2eq_fossil   = CO2_fossil + (CH4_fossil x 29.8) + (N2O x 273) + sum(HFC_i x GWP_i)
CO2eq_biogenic = (CH4_biogenic x 27.0) + (CO2_biogenic x 0)
CO2eq_LULUC    = CO2_LUC + (CH4_LUC x 27.0) + (N2O_LUC x 273)
CO2eq_total    = CO2eq_fossil + CO2eq_biogenic + CO2eq_LULUC
```

The A–E climate-impact rating (Section 4) is assigned on the **total** indicator. Sub-indicators are reported separately when any contributes more than 5% of the total, per EU PEF reporting rules.

5.5.2 Other Indicators (out of EmpCo scope)

For the September 2026 EmpCo release, only the climate-impact indicator above is in scope. A validated provider pathway may operationally support additional indicators (e.g. water scarcity via the AWARE method, nutritional quality, animal welfare, deforestation risk, or other PEF indicators such as land use, eutrophication, acidification) and document them in its pathway annex. These indicators are not in the certified market-use scope of EmpCo until the scheme adds them as a major change subject to ESFC member approval (see Section 1.4.2).

5.6 Allocation

When processes yield multiple products (e.g. meat and dairy from livestock, oil and meal from oilseeds), environmental impacts are allocated based on:

- **Economic allocation** (primary method): Impacts distributed proportionally to the economic value of co-products
- **Mass allocation** (secondary): Used where economic data is unavailable
- **Energy allocation** (alternative): Used for energy-related co-products

The allocation method is documented for each product assessment.

5.7 Data Hierarchy

Data inputs follow a quality hierarchy:

Priority	Data Type	Description
1	**Primary data**	Direct measurements from producers (energy meters, utility bills, supplier certificates)
2	**Site-specific estimates**	Producer estimates based on operational knowledge
3	**Published LCA studies**	Peer-reviewed data from scientific literature
4	**LCI database averages**	Representative data from a recognised LCI database (e.g. Agribalyse, Ecoinvent, or other provider-declared databases)
5	**Modelled estimates**	Gap-filling using conservative defaults and the pathway's gap-filling logic

See Section 6 for detailed data input requirements and Annex C for data quality tiers.

5.8 Gap-Filling

When primary or secondary data is unavailable, a validated pathway shall use scientifically defensible gap-filling logic. Each pathway documents its gap-filling logic in its provider-pathway submission. The VVB verifies that gap-filling is calibrated against PEFCRs and published LCA data, that estimates are conservative, and that the audit trail records each gap-filling decision and its inputs.

5.9 Uncertainty

A validated pathway shall:

- Track and report uncertainty for each data point per ISO 14044
- Use Monte Carlo simulation or equivalent probabilistic methods where feasible
- Apply conservative defaults where uncertainty is high
- Document confidence intervals in the evidence file

The pathway's uncertainty handling shall be designed so that typical data uncertainties do not routinely change a product's rating category (see Section 4.7).

5.10 Benchmarks (Provider-Defined)

Where a validated pathway operates a rating system that compares product results against a benchmark, the pathway shall document:

- The composition and source of the benchmark dataset
- Geographic and temporal scope
- Methodology used to derive benchmark values
- Update cadence
- How bias (e.g. exclusion of the provider's own customers) is controlled

The scheme does not prescribe a single benchmark. Different pathways may use different benchmarks appropriate to their target market and data availability. The Sept 2026 release does not require a benchmark for climate-impact claim verification (a verifiable absolute CO_2eq result against EF 3.1 is sufficient); pathways that include rating systems shall document their benchmarks as above.

5.11 Calculation Engine

Each validated pathway operates a calculation engine that implements the LCA methodology described in this section. The scheme does not prescribe a specific engine, programming language, or architecture. Engines may be open-source, proprietary, or hybrid; matrix-based, graph-based, or other.

The VVB verifies that the engine:

- Correctly implements the LCIA method (EF 3.1) and the system boundary definitions in this section
- Produces deterministic results for identical inputs
- Maintains a complete audit trail
- Complies with the validated change management process specified in Section 12

5.12 Open Documentation Requirement

The methodology operated by each validated pathway shall be sufficiently documented for an independent VVB to audit it. Provider pathways are not required to be open-source, but shall provide enough documentation (methodology specification, formulas, gap-filling rules, characterisation factor sets, version logs) for the VVB to verify conformity and reproducibility.

Methodology changes (such as adding a new impact category, changing allocation rules, or modifying core formulas) are classified as major changes requiring VVB approval before deployment.

6. Data Requirements

Document: EmpCo-06 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

6.1 Purpose

This document specifies the framework-level data requirements for assessments produced under a validated provider pathway. The framework specifies the *outcome* (an auditable evidence file per Section 6.5 and a documented data-quality framework per Annex C), not the specific input fields a pathway shall collect. Each validated provider pathway declares its own data-intake fields and processes in PA-04 of its pathway annex.

6.2 Assurance Levels

Two assurance levels are operated under EmpCo, distinguished by data completeness at intake and by the QA method applied:

Aspect	Enhanced Assurance	Standard Assurance
Typical use	Per-product claims where the participating company orders product-exact intake — available for any claim surface	Menu labels, food-service operational reporting, B2B — and on-pack/shelf claims at catalogue scale, verified by sampling
Data completeness	Comprehensive primary data sufficient to compute each life-cycle stage with limited reliance on gap-filling	Minimum data (ingredient names + quantities); the pathway's gap-filling logic supplies remaining parameters
QA method	Expert review or validated automated pipeline (per Section 7.4)	Automated validation per the same outcome requirements
Accuracy threshold	± 10% of the reference value	± 20% of the reference value, with ≥ 80% rating-category agreement
Validity	24 months for questionnaire-based assessments; continuous with a 24-month recalculation cap for enterprise data integration	Continuous (recalculated automatically when input data changes)

The pathway annex (PA-02.4) declares which assurance levels the pathway operates and the data-intake methods used at each.

The assurance level is chosen by the participating company and is never a precondition for a claim surface: on-pack and shelf claims may be backed by either level, subject to the surface covenants of Section 8.6.1. At retail catalogue scale (tens of thousands of products), sample-based verification (Section 11.4) is the designed verification route; per-product Enhanced intake is an option the trader orders, not an entry condition.

6.3 Confidentiality of Submitted Data

Submitted data may include commercially sensitive information (recipes, supplier identities, sourcing strategies). Each validated pathway shall:

- Operate the data intake under a written data-handling policy disclosed to participating companies

- Use access-controlled storage with need-to-know access
- Apply confidentiality obligations to any third-party (including the VVB) granted access for audit purposes
- Not share data between participating companies without explicit written consent

6.4 Data Gaps

Where data is incomplete, the pathway's gap-filling logic supplies estimates per Section 5.8. All gap-filled parameters shall be flagged in the evidence file (Section 6.5) so that the VVB can verify the share of gap-filling per assessment and the conservatism of the estimates.

6.5 Evidence File Structure

For each certified assessment, the validated provider shall produce an *evidence file* that is delivered to the trader, retained by the provider, and accessible to the VVB on request. The evidence file is the object the VVB samples during surveillance to verify that a claim is correctly substantiated. Its structure is normative for all validated provider pathways; pathways are free to implement it as a structured document, a database record, an API response, or a downloadable bundle, provided the required content is present and machine-readable.

6.5.1 Required Content

Field	Description
Claim identifier	Unique identifier (UUID or equivalent) linking the evidence file to the public claim record (see Section 1.5)
Trader and product/recipe	Trader name, product or recipe identifier, and a stable scope description
Claim scope and date	What the claim covers (single product, recipe, portfolio, time window) and the date of issue
Pathway and version	Certified provider pathway name, pathway version, calculation engine version, LCI database name and version
Functional unit	Declared functional unit (DFU per Section 1.4.1) and any additional informational unit reported alongside
LCIA result — climate change	EF 3.1 climate-change *total* result in kg CO_2eq per declared functional unit
LCIA sub-indicators	EF 3.1 climate-change fossil, biogenic, and LULUC sub-indicators where any contributes >5% of total (see Annex D)
Other LCIA results	Where the pathway operationally covers additional indicators (out of EmpCo scope per Section 1.4.2), one row per indicator with method, unit, and value
Input data — as submitted	The data the participating company provided, including ingredient names, quantities, declared origins/methods/certifications, and supplier references
Input data — as locked	The data after intake review and any clarifications, with timestamps

Field	Description
Ingredient match log	For each ingredient: matched ingredient-database entry, match tier, confidence score where applicable, and any expert override
Gap-filling log	For each gap-filled parameter: the gap-filling module, its inputs, decision-logic summary, and output value; flag whether the value is from primary data, secondary data, or modelled estimate
Allocation decisions	Where applicable: allocation method used (economic / mass / energy) and rationale
Cut-off log	Any flows excluded under cut-off criteria with their estimated contribution
Assumption log	All assumptions with justifications
Outlier flags	Any outlier flags raised by the pathway's QA processes and their resolution
QA evidence	Confirmation of how the assessment satisfied the QA outcome requirements (Section 7.4): expert reviewer ID where applicable, automated check IDs and results, peer-review record where applicable
Borderline status	Whether the assessment falls within the borderline band of any rating threshold
Rating output	A–E rating category, the threshold band assigned, and the benchmark reference
Reproducibility hash	Cryptographic hash over the locked inputs + pathway version + database version, sufficient to verify that re-running the same inputs against the same pathway produces the same result
Authorisation	Identity of the person or system that authorised release of the assessment, and date

6.5.2 Format

A pathway shall declare a single canonical format for its evidence files (e.g. JSON Schema, structured PDF, XML) and shall make the format specification available to the VVB. Within a pathway, all evidence files shall conform to the declared format.

6.5.3 Retention

Evidence files shall be retained for a minimum of **5 years** from the date the underlying claim was last in market. The pathway shall make evidence files available to the VVB within 5 business days of a sample request.

6.5.4 Confidentiality

Evidence files may contain confidential commercial information. Such information is not published in the public verification infrastructure (Section 1.5). The VVB and the trader hold confidentiality obligations per Section 10.3.6 and EmpCo-VVB-01 Section 7.

6.5.5 Public Verification Record

For each verified claim, a *public verification record* derived from the evidence file is published in the transparency portal (Section 1.5). The public record contains the non-confidential subset of the evidence file: claim identifier, trader name, product or recipe identifier, pathway and version, LCIA result and sub-indicators, label licence ID, validation/verification body, dates, and complaint contact. Confidential commercial information is not included.

7. Assessment Process

Document: EmpCo-07 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

7.1 Purpose

This document specifies the framework-level requirements for the assessment process operated by a validated provider pathway. The framework specifies the *outcomes* the process shall meet (the QA outcome requirements in Section 7.4) and the cross-cutting requirements that apply to every assessment, regardless of assurance level. The internal pipeline of an individual pathway (data intake, ingredient matching, gap-filling, calculation, rating, delivery) is documented by the pathway in PA-05 of its annex.

7.2 Common Process Requirements

A validated pathway's assessment process shall:

- Accept input data per its declared assurance levels (PA-02.4)
- Apply the framework's normative methodology (EF 3.1 for climate change; cradle-to-grave; ISO 14044 cut-off; DFU functional unit) per Section 5
- Document all gap-filling decisions and assumptions in the evidence file (Section 6.5)
- Produce results that are traceable, reproducible, and auditable per the QA outcomes in Section 7.4
- Deliver results at the assurance level under which the assessment was produced (Enhanced or Standard)

7.3 Assurance-Level Requirements

The two assurance levels share the same methodology, calculation engine, and benchmark; they differ in the data completeness expected at intake, the QA method applied, and the accuracy thresholds the assessment shall meet:

Aspect	Enhanced Assurance	Standard Assurance
Data completeness	Comprehensive primary data; limited gap-filling	Minimum data; extensive gap-filling permitted
QA method	Expert review or validated automated pipeline	Automated validation against the same outcome requirements
Accuracy threshold	± 10% of reference value	± 20% of reference value, ≥ 80% rating-category agreement
Validity	24 months (questionnaire) / continuous + 24-month cap (enterprise integration)	Continuous (recalculated automatically)
Permitted claim use	On-pack, retail shelf, regulated marketing	Menu labels, food-service operational claims

The pathway documents in PA-05 how it satisfies these requirements at each assurance level it operates.

7.4 QA Outcome Requirements

All assessments, regardless of assurance level, shall satisfy the following five outcome requirements. The *method* of achieving these outcomes (expert review, automated validation, hybrid) is at the validated provider's discretion, subject to VVB verification that the outcomes are met.

7.4.1 Accuracy

Assessment results shall be within the tolerance of reference values stated for the assurance level (Section 7.3). Reference values are produced by the regression test suite specified in Section 12.5; the suite is the basis on which accuracy is verified at each annual surveillance.

7.4.2 Reproducibility

Given the same input data, database version, and engine version, the assessment system shall produce bit-identical results. Reproducibility is verified as part of the regression test suite.

7.4.3 Completeness

Every assessment shall have a value for each required indicator and required field of the evidence file (Section 6.5.1). Gap-filled parameters shall be identified, with the gap-filling method and data source traceable for each filled parameter.

7.4.4 Traceability

Every assessment result shall be traceable to its input data, calculation-engine version, and ingredient-database version, and to the gap-filling decisions and assumptions made during calculation. The evidence file (Section 6.5) is the artefact in which traceability is captured. Records are retained for a minimum of 5 years.

7.4.5 Outlier Detection

Assessments with unusual values shall be flagged for review. The pathway shall define and document its outlier-detection rules (e.g. results more than 3 standard deviations from the category mean; results near a rating threshold). Flagged assessments shall be reviewed (manually or via enhanced automated checks) before publication. Flagging rates and resolution outcomes shall be logged and available to the VVB.

7.5 Borderline Handling

Products and recipes scoring near a rating threshold receive enhanced sensitivity analysis. The pathway shall document its borderline-handling procedure, flag the borderline status in the evidence file, and prioritise borderline cases for VVB sample-based verification.

7.6 Re-Assessment Triggers

A validated pathway shall define and document the events that trigger re-assessment of an existing claim. Common triggers include:

- Material change to the assessed product, recipe, or supplier
- Detection of a non-conformity affecting the assessment
- Methodology updates (where the change is reclassified per Section 12)
- Validity-period expiry (per the assurance level)

Validity periods and re-assessment behaviours specific to assurance level are documented in Section 8.5.1.

7.7 Result Delivery

The validated pathway delivers results to the participating company in a form consistent with the assurance level: a full assessment report and evidence file (Section 6.5) for Enhanced Assurance; an automated rating output and evidence file for Standard Assurance. Both forms include the rating category, the absolute environmental impact value, and a link to the public verification record (Section 1.5).

8. Label Usage

Document: EmpCo-08 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

8.1 Purpose

This document specifies the rules for using EmpCo environmental labels and associated environmental claims. The framework specifies what shall be communicated and the rules for permitted vs. prohibited claim wording. The visual design used to display ratings (logo, layout, colour, typography) is managed by each validated provider as a brand matter, not a certification matter; the only normative visual requirement is non-contradiction (Section 8.2.4).

8.2 General Requirements

8.2.1 Eligibility

EmpCo environmental labels may only be used:

- On products or in communications for items that have completed the assessment process at the appropriate assurance level (see Section 7)
- With a current, valid assessment (within the validity period for the applicable assurance level, Section 8.5.1)
- In accordance with the rules in this document
- By a trader with an active EmpCo licence in force (per the binding mechanism in Section 1.2.2)

The trader's licence may take one of two forms, per Section 1.2.2:

- **Schedule form (default):** a licence in force by virtue of the trader's acceptance of the validated provider's standard customer terms, where those terms incorporate the EmpCo pass-through clauses (Annex G). Traders making on-pack or shelf claims are additionally bound by the surface schedule (on-pack covenants); a trader ordering the Enhanced Assurance option records that order individually and is individually listed on the public verification portal. All other traders are recorded in the provider's trader register; their status is confirmed to any person on request (Annex G, no public listing required).
- **Individually negotiated licence agreement:** for traders requiring bespoke commercial terms (or, where applicable, with the scheme owner, whose decisions are taken by the Certification Committee) — incorporating the EmpCo pass-through clauses and, for on-pack and shelf claims, the same surface covenants, with individually recorded acceptance.

In either form, the licence is the contractual basis for the trader's compliance with the rules in this document, with the complaint procedure in Section 10, and with the sample-based verification in Section 11. The validated provider documents its specific implementation of the binding (e.g. the AGB version and effective date) in PA-10 of its pathway annex.

8.2.2 Assurance Levels and Claim Surfaces

Any claim surface may be backed by an assessment at either assurance level. The assurance level is a property of the assessment's data intake and QA (Section 6.2), chosen by the participating company; the claim surface determines which display and correction rules apply (Section 8.6). On-pack product claims and retail shelf labels carry the surface covenants of Section 8.6.1 and Annex G at every level — label licence in unaltered form, print-run and correction timelines (Section 8.5), pre-market notification of rating-relevant changes, supplier evidence on request — and are verified by sampling at every level

(Section 11.4). Enhanced Assurance is activated only by the participating company's express order or logged acceptance; it is never a precondition for a claim surface.

8.2.3 Metric Requirements

A communication using an EmpCo-verified rating shall include:

- **Rating category** (A–E letter grade) corresponding to the current, valid assessment
- **Discoverable EmpCo attribution** — a person viewing the rating shall be able to determine, without external help, that the rating originates under EmpCo (this may be achieved through any reasonable means: name, logo, QR code, link, footnote, adjacent text)

A communication may additionally include:

- **Absolute value** (e.g. CO_2eq per DFU); required on the back of pack for on-pack claims, recommended elsewhere
- **Benchmark comparison** (percentage above or below category benchmark); where displayed, derived from assessment data
- **Sub-indicators** (fossil / biogenic / LULUC) where any contributes >5% of the total, per EU PEF reporting rules

All values shall match the assessment output within rounding tolerance.

8.2.4 Visual Presentation

Trader-branded labels are permitted (hybrid pathway, Section 1.2.6) provided all display requirements of this section are met; the Directive's open-access requirement attaches to the **scheme**, not to individual label designs. The specific visual design used to display rating metrics (star ratings, letter grades with colour coding, icon systems, bar charts, numerical displays) is outside the scope of this scheme.

The sole normative requirement is **non-contradiction**: the visual representation shall not contradict the meaning of the underlying rating metric. For example:

- Visual signifiers conventionally associated with positive performance (green colour, high star count, upward indicators) shall not be used to represent below-average or poor ratings (C, D, E)
- Visual signifiers conventionally associated with negative performance (red colour, warning symbols) shall not be used to represent above-average ratings (A, B)
- The visual representation shall not selectively omit or obscure rating information in a way that misrepresents the assessment outcome

8.2.5 Claim Scope on the Medium; Supporting Information via Digital Link

Two tiers of information, two rules. **The claim and its scope qualifier must be legible on the medium carrying the claim**: what the rating covers (the assessed product or recipe, the environmental dimension, the rating basis where the medium shows a grade) is material information under UCPD Articles 6–7; a QR code alone does not satisfy this tier. **Supporting information may be provided via QR code or stable URL**: methodology documentation, thresholds and benchmark, functional-unit detail, verification findings, and the public verification record may sit behind the digital link. Basis: for certification-scheme information the Directive prescribes no medium at all; in the Directive's neighbouring future-performance-claims regime — where supporting information **is** mandated — the Commission's Q&A (June 2026 version, Q12) expressly accepts a QR code guiding to a website. A fortiori, the digital link suffices here. The Section 8.6 channel rules apply this split per channel.

8.3 Approved Claims

Rating	Permitted Claims	Requirements
A	**"Climate-friendly"** (defined rating term, see Section 8.3.1); "Excellent environmental impact"; "Among the most sustainable [product type] available"; "Significantly better than category average"; "[X]% lower climate impact than typical [product type]"	Percentage claims must be substantiated by assessment data
B	"Good environmental performance"; "Better than average environmental impact"	—
C–E	"EmpCo-verified rating"; "Transparent environmental assessment"; "Committed to improving our environmental impact"	No performance superiority claims permitted
Comparative (any rating)	"[X]% lower climate impact than category average"; "Uses [X]% less water than typical [product type]"; "Improved environmental performance by [X]% since [year]"	Specific percentage backed by assessment data; product category clearly defined; timeframe stated for year-over-year claims; substantiation available on request

8.3.1 Defined Rating Terms

Certain words that are generic — and therefore prohibited in unqualified use under the amended UCPD blacklist (Annex I point 4a: generic environmental claims without demonstrable recognised excellent environmental performance) — become **defined labels** when bound to a specific rating threshold inside this third-party-verified scheme. The scheme owner's position is that a term bound to a published, auditable threshold and carried by a sustainability label based on a certification scheme (Annex I point 2a; UCPD Art. 2 point (r)) is no longer a *generic* claim but a defined one, functioning like "organic" (Reg. (EU) 2018/848) or the "A" energy class (Reg. (EU) 2017/1369): a generic-sounding word denoting a specific, auditable criterion. *(Analysed in the scheme owner's legal position paper (docs/legal-position-paper.md, Q8): the definitional exits are two — the claim is contained on a sustainability label (Art. 2(p)), and its specification is on the same medium (Section 8.2.5); not legal advice.)*

The following term is defined within this scheme:

Defined term	Bound to	Quantitative criterion	Reference
Climate-friendly	A rating on the climate (CO_2eq) indicator of a validated pathway	The pathway's declared A threshold, which shall be **at least 50% below the pathway's declared benchmark** (science-based derivation per Section 4.5; e.g. < 1,947 g CO_2eq/DFU under the published example benchmark of 3,894 g CO_2eq/DFU)	Section 4.5; PA-09

Usage conditions for defined rating terms:

- The term SHALL only be used for products or dishes that achieve the corresponding rating under a valid assessment (either assurance level) of a validated pathway holding a label licence.
- The term SHALL NOT be used before the pathway's validation statement and label licence are in force, nor for products or dishes rated B, C, D, or E on the bound indicator.
- The term SHALL be accompanied by discoverable attribution (per Section 8.2), typically via QR-linked disclosure naming the scheme, the pathway's declared threshold, the validated provider, and the public verification record (Section 1.5).
- The term SHALL NOT be combined with offset-based neutrality language (see Section 8.4).
- If the underlying rating falls below the A threshold at reassessment, use of the term SHALL cease within the update window specified in Section 8.5.

Future defined terms MAY be added to this section through the change management process in Section 12. Additions SHALL be treated as **major changes**, because they alter the set of substantive environmental claims permitted under the scheme.

8.4 Prohibited Claims

The following claims are **not permitted** in connection with any EmpCo-verified assessment:

- "Carbon neutral" or "climate neutral" (unless separately verified by an independent offset programme)
- "Zero environmental impact"
- "Most sustainable product" (without independent substantiation of the superlative)
- "Better than [specific competitor product]" (without that competitor's consent and verified data)
- "Eco-friendly", "eco", "green", "sustainable", "planet-friendly", "good for the planet" — generic terms (UCPD Annex I point 4a) that are **not** defined within this scheme (contrast "climate-friendly", Section 8.3.1, which is a defined rating term bound to the A threshold)
- Any claim implying that offsets alone justify environmental superiority
- Any modification or misrepresentation of the verified rating
- Selective promotion of only high-rated items while omitting lower-rated items from communication

These prohibitions align with the EU Empowering Consumers Directive (2024/825), which prohibits vague or unsubstantiated environmental claims and claims based solely on carbon offsets.

8.5 Validity and Withdrawal

8.5.1 Validity Period

Assurance level / intake	Validity
Enhanced — questionnaire	24 months from the date of final approval, provided no re-assessment trigger has occurred (per Section 7.6)
Enhanced — enterprise data integration	Continuous (recalculated automatically when source data changes), subject to a 24-month recalculation cap and to an active integration in good standing with the VVB
Standard	Continuous (recalculated automatically). Recipe data shall be updated within 30 days of any recipe change.

When a rating changes, packaging and marketing materials shall reflect the current rating within 6 months. Companies shall not selectively display old vs. new ratings. Existing packaging in the supply chain may be sold through, but new production runs shall not display expired ratings.

8.5.2 Withdrawal

The right to use EmpCo environmental labels may be withdrawn where:

- The trader fails to comply with label-usage rules
- The assessment validity period expires without renewal
- The VVB identifies a non-conformity that affects the assessment (see Section 9)
- The trader licence is terminated (per Annex G Section G.2.6)

Upon withdrawal, the trader shall cease use of EmpCo environmental labels within 30 days, except for existing packaging already in the supply chain.

8.6 Channels of Use

EmpCo labels and claims may be used across the channels below, subject to the assurance-level and surface rules in Section 8.2.2 and the visual-presentation requirement in Section 8.2.4. The framework specifies the rules below; the visual design (layout, colour, typography, sizing) is managed by the validated provider as a brand matter.

8.6.1 On-Pack and Retail Shelf Claims (any assurance level)

- Rating category (A–E) and discoverable EmpCo attribution (per Section 8.2.3) are required
- Front-of-pack and back-of-pack uses, retail shelf labels, and in-store digital screens follow the same rules
- **Portfolio coverage requirement:** Where a trader displays EmpCo ratings for products in a category, all assessed products in that category shall be displayed (selective display of only high-rated products is prohibited)
- A QR code or stable URL linking to the public verification record (Section 1.5) is required
- A methodology reference (e.g. “Assessed under EmpCo using ISO 14040/14044 LCA methodology”) is required somewhere on the package or in the linked record

8.6.2 Food-Service Menu Labels and Reports (any assurance level)

- Rating category (A–E) per dish, displayed adjacent to the dish name or description
- All dishes shall be rated; where a subset is unassessed, the menu shall indicate it (e.g. “rating pending”)
- Aggregated reports (daily, monthly) may show menu averages, trend over time, A–E rating distribution; report content shall be derived from underlying assessments and shall not extrapolate beyond the assessed menu (e.g. no “carbon-neutral kitchen” claims based on menu ratings)
- Discoverable EmpCo attribution per Section 8.2.3 in all formats

8.6.3 Digital and Marketing

- Website pages, social media, and advertising may display EmpCo rating metrics, subject to the approved-claim list (Section 8.3) and prohibited-claim list (Section 8.4)
- All claims shall be substantiated by assessment data and shall not imply that the rating covers aspects outside the assessed scope
- A link to the public verification record (Section 1.5) is recommended for any communication that asserts a specific numeric or comparative claim

9. Non-Compliance

Document: EmpCo-09 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

9.1 Purpose

This document defines the non-conformity classification, corrective action procedures, and label suspension/withdrawal mechanisms for the ESFC EmpCo Certification Scheme. It addresses the requirements of EU Directive 2024/825 Article r(iii).

9.2 Scope of Non-Compliance

Non-compliance may arise at two levels:

1. **System level (the validated provider):** Non-conformity in the assessment methodology, database, calculation engine, QA processes, or change management — applies to assessments at both assurance levels
2. **Participant level (Participating companies):** Non-conformity in data accuracy, label or communication usage, or compliance with scheme requirements — applies to all participating companies regardless of assurance level

9.3 Non-Conformity Classification

9.3.1 Minor Non-Conformity

A deficiency that does not fundamentally undermine the integrity of the assessment system or the accuracy of ratings but represents a deviation from scheme requirements.

Examples:

- Incomplete documentation of an assumption that does not affect the rating
- Minor delay in re-assessment beyond validity period (up to 30 days)
- Incomplete traceability records for a single data point
- Minor label usage deviation (e.g. visual presentation contradicting metric meaning per Section 8.2.4)
- Single instance of missing QA documentation
- Non-substantive calculation-engine change deployed without change log notification

9.3.2 Major Non-Conformity

A significant deficiency that could affect the integrity of assessments or ratings, or represents a systematic failure in processes.

Examples:

- Systematic failure in QA processes (e.g. required QA checks consistently skipped or bypassed)
- Database entries with incorrect emission factors affecting multiple assessments
- Participating company providing materially inaccurate data
- Repeated minor non-conformities that indicate a systemic issue
- Label or communication usage making prohibited claims (see Section 8.4)
- Failure to process a legitimate complaint within specified timelines
- Systematic automated ingredient matching errors affecting rating accuracy across multiple assessments
- Food service operator selectively displaying only high-rated dishes while omitting lower-rated dishes
- Minor pathway change deployed without VVB notification

- **Major pathway change deployed without VVB approval** (see Section 12)

9.3.3 Critical Non-Conformity

A fundamental failure that undermines the credibility of the certification scheme or poses a risk of significant consumer harm.

Examples:

- Deliberate falsification of assessment data (by the validated provider or a participating company)
- Systematic calculation errors affecting the rating of multiple products or recipes
- Fundamental methodology deviation from ISO 14040/14044
- Use of EmpCo labels on products or recipes not assessed, or with expired/withdrawn assessments
- Refusal to cooperate with VVB audit
- Failure to act on a known critical error in published ratings
- Systematic pipeline failure producing incorrect ratings at scale (e.g. gap-filling malfunction, database corruption)
- Deliberate circumvention of the change management process to avoid VVB oversight

9.4 Corrective Action Procedures

9.4.1 Minor Non-Conformity

Step	Action	Timeline
1	VVB or The validated provider identifies and documents the non-conformity	Immediate
2	Root cause analysis	Within 10 business days
3	Corrective action plan submitted	Within 15 business days
4	Corrective action implemented	Within 30 calendar days
5	Verification by VVB or the validated provider's QA	Within 10 business days of implementation

- No label usage restrictions during correction period
- Non-conformity and resolution documented in audit records
- If not resolved within 30 days, escalation to Major Non-Conformity

9.4.2 Major Non-Conformity

Step	Action	Timeline
1	VVB identifies and formally documents the non-conformity	Immediate
2	Root cause analysis	Within 10 business days
3	Corrective action plan submitted to VVB for approval	Within 20 business days
4	VVB approves or requests revision of corrective action plan	Within 10 business days
5	Corrective action implemented	Within 90 calendar days

Step	Action	Timeline
6	VVB verifies corrective action effectiveness	Within 15 business days of implementation

Restrictions during correction period:

- Label usage for affected assessments may be restricted at VVB discretion
- New assessments in the affected category may be paused
- Participating companies are notified if their ratings are affected

Escalation: If corrective action is not completed within 90 days, or if the VVB determines the corrective action is insufficient, the non-conformity is escalated to Critical.

9.4.3 Critical Non-Conformity

Step	Action	Timeline
1	VVB identifies and formally documents the non-conformity	Immediate
2	**Immediate suspension** of affected ratings/ labels	Same day
3	Root cause analysis	Within 5 business days
4	Corrective action plan submitted to VVB	Within 10 business days
5	VVB approves corrective action plan	Within 5 business days
6	Corrective action implemented	Within 60 calendar days
7	VVB conducts special verification audit	Within 15 business days of implementation
8	VVB decides on reinstatement, continued suspension, or withdrawal	Within 10 business days of verification

Immediate consequences:

- All affected assessments are suspended
- Participating companies with affected products or recipes are notified within 24 hours
- Participating companies must cease label and communication usage on affected items immediately
- For automated assessments: affected ratings are removed from the API and digital displays automatically
- Public notice may be issued at VVB discretion

9.5 Suspension

9.5.1 Scope

Suspension may apply to:

- Individual assessments (if the non-conformity is assessment-specific)
- A category of assessments (if the non-conformity is category-specific)
- All assessments at a specific assurance level (if the non-conformity is level-specific, e.g. affecting only the automated pipeline)
- All assessments produced by the validated provider (if the non-conformity is systemic)
- A participating company's right to use labels or communicate ratings (if the company is the source)

9.5.2 Duration

Suspension remains in effect until:

- The corrective action is verified as effective by the VVB
- The VVB formally lifts the suspension in writing
- Maximum suspension duration: 6 months. If not resolved, the VVB shall proceed to withdrawal.

9.5.3 Communication During Suspension

- The validated provider notifies affected participating companies in writing within 24 hours
- Suspended ratings shall not be used in any new marketing or packaging
- Existing packaging in the supply chain may be sold through only if the non-conformity does not affect consumer safety or is not misleading

9.5.4 Effect of Provider-Licence Suspension on Traders

Suspension of a **provider** licence does not automatically suspend every dependent trader claim. The Certification Committee secretariat performs a **case-by-case impact assessment** over the provider's trader register: which trader claims rest on the suspended scope, and which continue to rest on unaffected validated components. Each affected trader receives a **written decision on its own claim use within 5 working days** of the provider suspension, stating whether its claims continue unaffected, must be corrected, or must be paused. For products already in the distribution chain, the practical old-stock measures named in the Commission's Q&A apply (covering or correcting claims by stickers, supplementary information at the point of sale) before any recall-level measure is considered. The assessment relies solely on the VVB's findings about the suspended scope, never on a re-assessment of the science.

9.6 Withdrawal

9.6.1 Grounds for Withdrawal

The label licence or individual assessment authorisations shall be withdrawn (by the Certification Committee) when:

- Critical non-conformity is not resolved within 60 calendar days
- Repeated major non-conformities demonstrate inability or unwillingness to comply
- Deliberate fraud or falsification is confirmed
- The validated provider or a participating company refuses to cooperate with the VVB
- Suspension period of 6 months expires without resolution

9.6.2 Withdrawal Process

1. VVB issues formal withdrawal notice with detailed justification
2. The validated provider or participating company has 10 business days to appeal (see Section 10)
3. If no appeal or appeal is unsuccessful, withdrawal takes effect
4. All use of EmpCo labels and ratings for affected items must cease within 30 calendar days
5. Withdrawal is documented in the public certification register

9.6.3 Re-Certification After Withdrawal

After withdrawal, re-validation (renewal) requires:

- Minimum waiting period of 6 months
- Demonstration that root causes have been addressed

- Full system audit by the VVB (equivalent to initial validation)
- Enhanced surveillance for the first 12 months following re-validation (renewal)

9.7 Records

All non-conformities, corrective actions, suspensions, and withdrawals are:

- Documented in the validated provider's quality management system
- Available to the VVB during audits
- Summarised in annual surveillance reports
- Retained for a minimum of 5 years

9.8 Participating Company Obligations

Participating companies have the following obligations under this scheme:

1. Provide accurate and complete data for assessments at the applicable assurance level
2. Notify the relevant validated provider of material changes to products or recipes (ingredients, sourcing, process) within 30 days
3. Use EmpCo labels and communications in accordance with Section 8
4. Cooperate with VVB audits (provide access to data, facilities, and systems upon request)
5. Cease label and communication usage immediately upon notification of suspension or withdrawal
6. Forward consumer or guest complaints relating to EmpCo assessments to the validated provider (see Section 10)
7. Keep recipe data current and update within 30 days of recipe changes (Standard Assurance)

10. Complaints and Appeals

Document: EmpCo-10 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

10.1 Purpose

This document defines the procedures for handling complaints and appeals related to the ESFC EmpCo Certification Scheme. It addresses the requirements of EU Directive 2024/825 Article r(iii).

10.2 Right to Complain

Any party with a legitimate interest may file a complaint regarding:

- The accuracy of a validated pathway's assessment or rating
- The methodology used for assessment
- The conduct of the validated provider in performing assessments
- The label usage by a participating company
- The conduct of the Validation/Verification Body
- The change management process or a specific change decision
- Any other aspect of this certification scheme

10.2.1 Eligible Complainants

Party	Examples
Consumers	End consumers who purchase products bearing certified environmental label, or food service guests who encounter verified ratings on menus or displays
Participating companies	Companies whose products or recipes have been assessed
Non-participating companies	Companies in the same market who believe a competitor's rating is inaccurate
NGOs and advocacy groups	Environmental organisations, consumer protection bodies
Regulatory authorities	National consumer protection or environmental authorities
Scientific community	Researchers with methodological concerns
General public	Any person with a substantiated concern

10.3 Complaint Procedure

10.3.1 Submission

Complaints may be submitted:

- **Email:** compliance@esf-coalition.org
- **Post:** European Sustainable Food Coalition, Attn: Compliance (address available on request via esf-coalition.org)
- **Online form:** Available on the transparency portal (empco.eaternity.org)

A complaint shall include:

- Name and contact details of the complainant (may request confidentiality)
- Description of the concern
- Product(s) or assessment(s) concerned (if applicable)
- Any supporting evidence or documentation
- The outcome sought by the complainant

10.3.1.1 Routing by Trader Type

Complaints concerning trader-level claims (claim wording, label use, public listing accuracy) are routed by the trader's binding tier (per Section 1.2.2):

- **Enhanced Assurance traders** (on-pack, retail shelf, regulated marketing): complaints are received by ESFC (or the validated provider where the provider is the licence-issuing entity) and addressed directly with the trader. The VVB is notified per Section 10.3.2.
- **Standard Assurance traders** (menu labels, food-service): complaints are received by ESFC or by the validated provider's published complaint contact, and routed to the validated provider in first instance. The provider has 30 calendar days to investigate and resolve, including (where applicable) suspension of service to the trader under the provider's terms (Annex G clause on termination authority). If the provider does not resolve within 30 calendar days, the complaint is escalated to ESFC and to the VVB. The VVB receives an aggregate complaint summary at the annual surveillance audit (see Section 11.4).

Complaints concerning provider-level matters (calculation methodology, ingredient database, gap-filling logic, change-management compliance) follow the standard ESFC → VVB path regardless of trader type.

10.3.2 Processing Timeline

Step	Action	Timeline
1	Acknowledgement of receipt	Within 5 business days
2	Initial assessment and classification	Within 10 business days
3	Investigation	Within 20 business days of classification
4	Response to complainant with findings	Within 30 calendar days of receipt
5	Implementation of corrective actions (if needed)	Per Section 9 timelines
6	Final closure notification to complainant	Within 10 business days of resolution

10.3.3 Classification

Complaints are classified upon initial assessment:

Category	Description	Example
Assessment accuracy	Concern about the correctness of a specific rating	"The rating for product X seems too favourable"
Methodology	Concern about the assessment methodology	"Why does the DFU not include micronutrients?"
Label/communication usage	Concern about how a company uses the rating	"Company Y is using the label on products not assessed"
Process	Concern about the assessment or certification process	"Our data was not handled confidentially"

Category	Description	Example
Change management	Concern about a change to the calculation system	"A recent update changed our ratings without notice"
VVB conduct	Concern about the Validation/ Verification Body's actions	"The auditor was not impartial"

10.3.4 Investigation

The investigation includes:

- Review of the relevant assessment data, calculations, and documentation
- Consultation with the analyst(s) involved or review of automated pipeline logs
- Independent recalculation where appropriate
- Review of applicable scheme requirements
- Engagement with the participating company if relevant

The complainant may be contacted for additional information during the investigation.

10.3.5 Outcomes

Possible outcomes of a complaint investigation:

Outcome	Action
Complaint upheld	Corrective action per Section 9; rating correction if needed; complainant notified
Complaint partially upheld	Specific elements addressed; improvements implemented; complainant notified
Complaint not upheld	Detailed explanation provided to complainant; no change to rating or process
Referred to VVB	If the complaint concerns the VVB, referred for independent investigation

10.3.6 Confidentiality

- Complainant identity is kept confidential unless disclosure is necessary for the investigation
- The complainant may request anonymity; the validated provider shall honour this to the extent legally possible
- Participating companies are informed of substantive complaints affecting their products or recipes, but not necessarily of the complainant's identity

10.4 Appeals

10.4.1 Right to Appeal

The following parties may appeal a certification decision:

- **Participating companies:** Against a rating assigned to their product or recipe
- **The validated provider:** Against a VVB audit finding, suspension, or withdrawal decision
- **Any party:** Against the outcome of a complaint investigation

10.4.2 Grounds for Appeal

Appeals may be filed on the following grounds:

- Factual error in the assessment or audit findings
- Incorrect application of the scheme requirements
- Failure to consider relevant evidence
- Procedural irregularity in the investigation or decision process
- New evidence not available at the time of the original decision

10.4.3 Appeal Procedure

Step	Action	Timeline
1	Written appeal submitted with grounds and supporting evidence	Within 30 calendar days of the contested decision
2	Acknowledgement of receipt	Within 5 business days
3	Appeal assigned to independent reviewer (not involved in original decision)	Within 10 business days
4	Review of evidence and original decision	Within 20 business days
5	Hearing (if requested by appellant or deemed necessary)	Scheduled within 15 business days
6	Appeal decision issued	Within 45 calendar days of appeal submission

10.4.4 Independent Review

Appeals against certification decisions are reviewed by a panel independent of the original decision:

- **Appeals against a validated provider's decisions (ratings, complaint outcomes):** Reviewed by the VVB or an independent LCA expert appointed by the validated provider
- **Appeals against VVB decisions (audit findings, suspension, withdrawal):** Reviewed by an independent arbitrator agreed upon by both parties, or by the accreditation body

The appeal reviewer:

- Was not involved in the original decision
- Has no conflict of interest with any party
- Has relevant technical expertise (LCA, food science, or certification)
- Reviews all evidence and may request additional information
- Issues a binding decision with full written justification

10.4.5 Appeal Outcomes

Outcome	Action
Appeal upheld	Original decision reversed or modified; corrective action implemented
Appeal partially upheld	Specific elements of the decision modified
Appeal dismissed	Original decision stands; full justification provided

10.4.6 Costs

- Filing a complaint is free of charge

- Filing an appeal is free for participating companies and consumers
- If an appeal requires an independent arbitrator, costs are shared between the parties unless the appeal is fully upheld, in which case the responding party bears the costs

10.5 Escalation

10.5.1 Regulatory Referral

If a complainant is not satisfied with the outcome of the complaint and appeal procedures, they may:

- Contact the relevant national consumer protection authority
- File a complaint with the VVB's accreditation body
- Pursue legal remedies under applicable law

10.5.2 Systemic Issues

If multiple complaints or appeals reveal a systemic issue:

- The validated provider initiates a root cause analysis
- The VVB is notified and may initiate a special audit
- Corrective actions are implemented per Section 9
- Stakeholders are informed through the annual stakeholder report

10.6 Records and Reporting

10.6.1 Complaint Register

ESFC maintains a register of all complaints and appeals, including:

- Date received and reference number
- Complainant category (anonymised)
- Classification and subject matter
- Investigation findings
- Decision and corrective actions
- Resolution date and outcome

10.6.2 Reporting

- Complaint and appeal statistics are included in the annual surveillance report to the VVB
- Aggregated, anonymised complaint data is published in the annual stakeholder report
- Trends in complaints are used to identify systemic improvement opportunities

10.7 Contact

Complaints and Appeals:
Email: compliance@esf-coalition.org
Web: esf-coalition.org

11. Surveillance

Document: EmpCo-11 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

11.1 Purpose

This document defines the surveillance mechanisms ensuring ongoing conformity of a validated provider's environmental assessment system. It covers annual system audits, sample-based verification, change management review, re-validation (renewal), and trigger audits. It addresses the requirements of EU Directive 2024/825 Article r(iv).

11.2 Certification Cycle

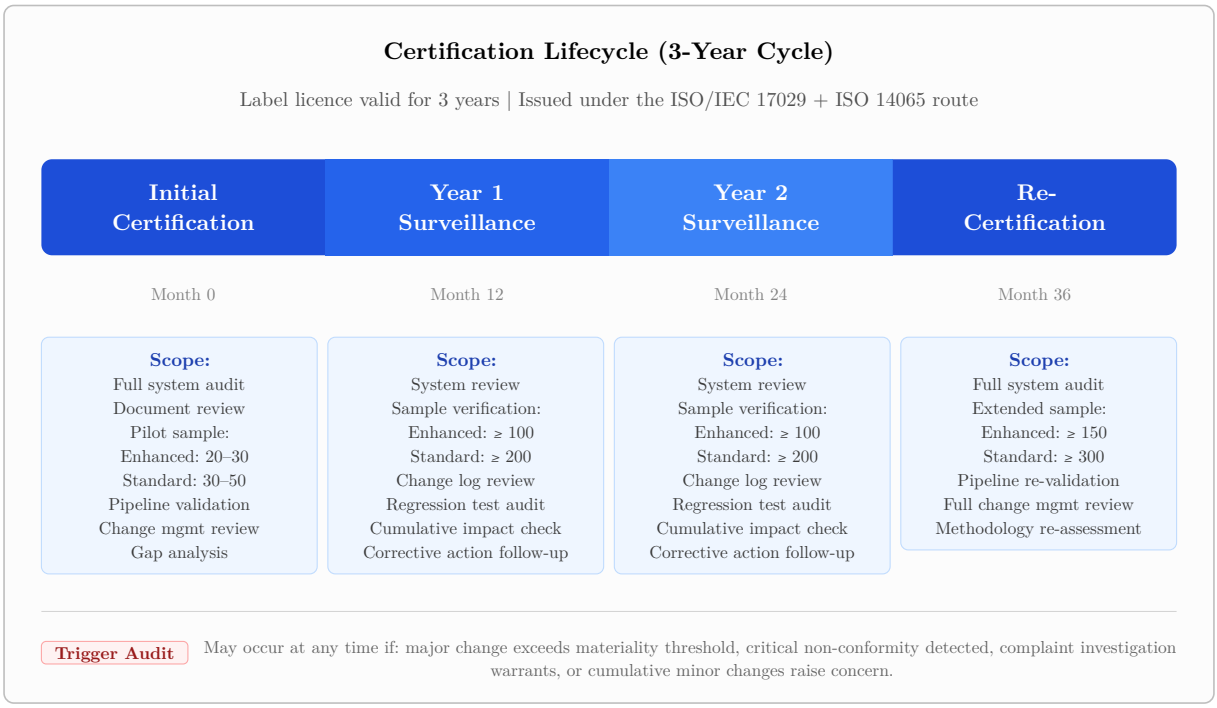

Figure 1: Three-year certification cycle showing audit scope and minimum sample sizes at each stage. Trigger audits may interrupt the cycle at any point.

Event	Frequency	Scope
Initial validation audit	Once	Full system audit + pilot sample verification
Annual surveillance audit	Yearly (years 1 and 2)	System audit + sample-based verification + change management review
Re-validation (renewal) audit	Every 3 years	Full system audit + extended sample verification + full change review
Trigger audit	As needed	Focused audit on specific changes

The label licence is valid for **3 years** from the date of the initial validation, subject to successful annual verification, and is issued by the Certification Committee on the basis of the VVB's validation statement.

11.3 Annual System Audit

11.3.1 Scope

The annual surveillance audit covers:

Methodology conformity:

- Continued compliance of LCA methodology with ISO 14040/14044
- Any changes to system boundaries, functional unit, or allocation methods
- Changes to cut-off criteria or impact assessment methods

Database validity:

- Database update log and change documentation
- New data sources added since last audit
- Data quality assessment procedures
- Emission factor currency and accuracy (spot checks)

Quality assurance processes:

- Achievement of QA outcome requirements: accuracy, reproducibility, completeness, traceability, and outlier detection (see Section 7.4)
- QA effectiveness at Enhanced Assurance level (analyst training, review processes, documentation)
- QA effectiveness at Standard Assurance level (automated validation, matching accuracy, flagging procedures, gap-filling calibration)
- Validated automated pipeline accuracy (where applicable): re-confirmation against current regression test suite
- Enterprise data integration health (where applicable): data extraction accuracy, mapping currency, reconciliation records, propagation timeliness
- Operator dashboard feedback and correction processes

Change management:

- Review of all changes since last audit (see Section 11.3.4)

Organisational processes:

- Complaint and appeal handling (see Section 10)
- Non-conformity management (see Section 9)
- Data confidentiality and security
- Staff changes (especially key technical personnel)

Corrective action follow-up:

- Status of all open non-conformities from previous audits
- Effectiveness of implemented corrective actions

11.3.2 Audit Procedure

1. VVB provides audit plan at least 4 weeks in advance
2. The validated provider provides requested documentation
3. On-site or remote audit (typically 2–3 days)
4. VVB issues audit report within 15 business days
5. The validated provider responds to findings within 30 calendar days
6. VVB confirms surveillance outcome (pass, conditional, fail)

11.3.3 Outcomes

Outcome	Meaning	Consequence
Pass	No major non-conformities; all minor issues have corrective action plans	Label licence maintained
Conditional	Major non-conformity identified but correctable	Label licence maintained conditionally; corrective action within 90 days
Fail	Critical non-conformity or unresolved major non-conformities	Label licence suspended by the Certification Committee per Section 9

11.3.4 Change Management Review

The change management review is a **standing item** in every annual surveillance audit. The VVB shall review:

1. **Change log completeness:** All changes to the validated pathway (calculation engine, ingredient database, gap-filling logic) since last audit are documented in the change log with classification (non-substantive, minor, major)
2. **Classification accuracy:** Spot-check that changes were correctly classified using the materiality threshold criteria
3. **Regression test results:** Review regression test suite results for each release since last audit, verifying that:
   - The test suite meets the composition requirements set out in Section 12.5.1, and the suite size and structure declared in PA-07.1 of the pathway annex
   - Tests were run before deployment
   - Results were logged and retained
4. **Materiality analysis:** For minor changes, verify that impact remained below the materiality threshold (rating change for <2% of items, OR <10% CO_2eq/DFU change for <5% of items)
5. **Major change approvals:** Verify that all major changes received VVB approval before deployment
6. **Emergency changes:** Review any emergency changes deployed under the expedited procedure, verifying that notification was provided within 48 hours and retroactive review was completed

See Section 12 for the complete change management process.

11.4 Sample-Based Verification

11.4.1 Purpose

The VVB verifies the accuracy of individual assessments by examining representative samples at both assurance levels. This confirms that the certified system consistently produces correct outputs.

VVB claim sampling and the provider-level regression test suite (Section 12.5) are two halves of one coverage system: the regression suite confirms the calculation system behaves correctly across the pathway's declared scope, while claim sampling confirms the system is applied correctly to real market claims.

11.4.2 Sample Size

The VVB shall define a documented risk-based sampling procedure under its ISO/IEC 17029 accreditation covering all assurance levels operated by the pathway. The framework specifies the **annual minima** below; the VVB sets larger samples where risk indicators warrant.

Assurance level	Annual minimum
Enhanced Assurance (questionnaire intake)	100 assessments
Enhanced Assurance (enterprise data integration)	200 assessments
Standard Assurance	200 assessments

The VVB may scale samples upward with assessment volume; informative scaling guidance is in EmpCo-VVB-03 (companion document). Samples are drawn from the assessment or calculation logs maintained by the validated pathway and made available per Section 6.5.3.

11.4.3 Sample Selection

The VVB selects samples using a documented combination of random and risk-based selection. Random selection ensures coverage across the pathway's product/recipe scope, rating categories (A–E), and participating-company population. Risk-based selection prioritises:

- New product categories or newly onboarded participating companies
- High gap-filling rates or low data completeness
- Borderline cases (near a rating threshold)
- Products subject to recent material change (recipe, sourcing, supplier)
- Categories or assessments where previous samples revealed discrepancies
- Products that have been the subject of complaints or appeals

The proportion of random vs. risk-based selection (typically 50/50 or 60/40) is at the VVB's discretion, documented in its sampling procedure.

11.4.4 Verification Procedure

For each sampled assessment, the VVB verifies:

- **Input data accuracy:** the locked input data matches available documentation (Enhanced) or the source system from which it was extracted (enterprise integration); the data has not been altered between submission and assessment
- **Calculation correctness:** independent recalculation of the climate-impact result against the pathway's evidence-file output, with an acceptable variance documented by the VVB (typically ± 5%)
- **Methodology conformity:** correct application of EF 3.1, cradle-to-grave boundary, ISO 14044 cut-off, and the pathway's gap-filling logic per its declarations in PA-04 / PA-05
- **Rating assignment:** correct comparison of the calculated impact against the pathway's declared A–E thresholds; correct flagging of borderline cases
- **Audit trail completeness:** the evidence file (Section 6.5) contains all required content for the sampled assessment

The VVB's detailed verification procedure is documented under its ISO/IEC 17029 accreditation and may use the informative companion document EmpCo-VVB-03 as a reference.

11.4.5 Discrepancy Handling

Finding	Severity	Action
No discrepancy	—	Assessment confirmed
Minor discrepancy (no rating change)	Minor	Documented; corrective action plan
Discrepancy causing rating change	Major	Rating corrected; affected company notified; root cause analysis

Finding	Severity	Action
Systematic discrepancy (pattern across samples)	Critical	Immediate suspension of affected category; full investigation

If more than 5% of the sample shows discrepancies causing rating changes, the VVB shall:

1. Expand the sample size by 50%
2. Conduct a focused system audit on the root cause
3. Determine whether affected ratings must be recalled and recalculated
4. Report findings to the validated provider's management, ESFC, and affected participating companies

11.4.6 Trader-Level Enforcement

When the VVB's sample identifies a non-compliant claim by a Standard Assurance trader (per the binding mechanism in Section 1.2.2 and the Annex G pass-through clauses), the VVB notifies the validated provider rather than enforcing directly against the trader. The validated provider's contractual termination authority over the trader (per the Annex G termination clause incorporated into the provider's customer terms) is the primary enforcement mechanism: the provider is required by its certification agreement with the VVB to suspend or terminate service to non-compliant traders within timelines defined in PA-10 of its pathway annex.

When the VVB's sample identifies a non-compliant claim by an Enhanced Assurance trader (with an individually signed licence), the VVB enforces directly under that licence agreement.

The VVB monitors the validated provider's effectiveness in enforcing against Standard Assurance traders as part of the annual change management review (Section 11.3.4); patterns of unresolved trader non-compliance constitute a system-level non-conformity at the provider level (see Section 9.3.2).

11.5 Re-Certification

11.5.1 Timing

Re-validation (renewal) shall be completed before the 3-year label-licence expiry. The re-validation (renewal) audit should be scheduled at least 3 months before expiry to allow time for corrective actions if needed.

11.5.2 Scope

Re-validation (renewal) includes the full scope of the initial validation:

- Complete system audit covering all areas in Section 11.3.1
- Extended sample-based verification (150% of annual sample size)
- Review of all changes since initial validation or last re-validation (renewal)
- Full change management review covering the entire certification period
- Review of complaint and appeal records for the certification period
- Assessment of the effectiveness of the surveillance programme

11.5.3 Outcome

Successful re-validation (renewal) results in a new 3-year label licence. Unsuccessful re-validation (renewal) results in label-licence expiry and cessation of label usage.

11.6 Trigger Audits

11.6.1 Events Requiring Trigger Audits

Under the validated change management process (see Section 12), trigger audits are primarily governed by the change classification system:

- **Major changes** to the validated pathway (calculation engine, ingredient database, or gap-filling logic) require VVB approval before deployment, which may include a trigger audit at VVB discretion
- **Organisational change:** Significant changes to key technical personnel, ownership, or organisational structure
- **Incident:** Discovery of a systematic error or external report of a significant issue
- **Regulatory change:** New regulatory requirements affecting the scheme (e.g. updated EmpCo guidance)

NOTE — Routine pathway updates (non-substantive and minor changes) no longer trigger individual audits. They are reviewed in aggregate at the annual surveillance through the change management review (Section 11.3.4).

11.6.2 Trigger Audit Procedure

1. The validated provider notifies the VVB of the triggering event (within 10 business days, or per change management timelines)
2. VVB assesses whether a trigger audit is required (within 10 business days)
3. If required, audit scope and timeline are agreed
4. Trigger audit conducted (typically 1–2 days, focused scope)
5. Findings and any required corrective actions documented
6. Label licence status updated by the Certification Committee if needed

11.7 VVB Reporting

11.7.1 Annual Surveillance Report

After each annual surveillance, the VVB issues a report including:

- Audit scope and dates
- Findings and non-conformities
- Sample verification results (pass rate, discrepancies, patterns)
- Change management review findings (change log completeness, classification accuracy, regression test adequacy)
- Status of previous non-conformities
- Overall conformity assessment
- Recommendations for improvement

11.7.2 Public Summary

A summary of the certification status is made publicly available:

- Label licence status (active, conditional, suspended, withdrawn)
- Label licence validity dates
- Scope of certification
- VVB identity and accreditation

11.8 Certified Implementer Obligations

The validated provider shall:

1. Maintain all records required for surveillance (minimum 5 years)
2. Provide the VVB with access to data, facilities, and personnel during audits
3. Notify ESFC and the VVB of changes per the validated change management process (see Section 12)
4. Implement corrective actions within specified timelines
5. Cover the costs of scheduled surveillance audits
6. Cooperate fully with sample-based verification requests
7. Maintain and execute the regression test suite for every release of the certified system
8. Maintain a complete change log available to the VVB at all times

12. Change Management

Document: EmpCo-12 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

12.1 Purpose

This document defines the validated change management process for updates to a validated pathway's calculation engine, ingredient database, and gap-filling logic. It establishes a three-tier change classification, materiality thresholds, regression testing requirements, and VVB notification and approval procedures.

The process ensures that routine software improvements can proceed without requiring ad-hoc VVB revalidation (renewal), while providing the VVB with appropriate oversight of changes that could affect assessment accuracy.

12.2 Scope

This process applies to all changes to:

- The pathway's calculation engine (software, algorithms, pipeline logic)
- The pathway's ingredient database (emission factors, ingredient entries, data sources)
- The pathway's gap-filling logic, including any Gap-Filling Modules (parameters, models, algorithms, defaults)
- A–E rating thresholds and benchmarks declared by the pathway
- The DFU formula or other framework-floor methodology items (changes to §1.4.1 items go through GOV-02 stakeholder consultation in addition to this process)

Changes to scheme documents, governance policies, or VVB requirements are governed by the stakeholder consultation process (see EmpCo-GOV-02) and are outside the scope of this document.

12.3 Change Classification

12.3.1 Three-Tier System

Every proposed change shall be classified into one of three tiers before deployment:

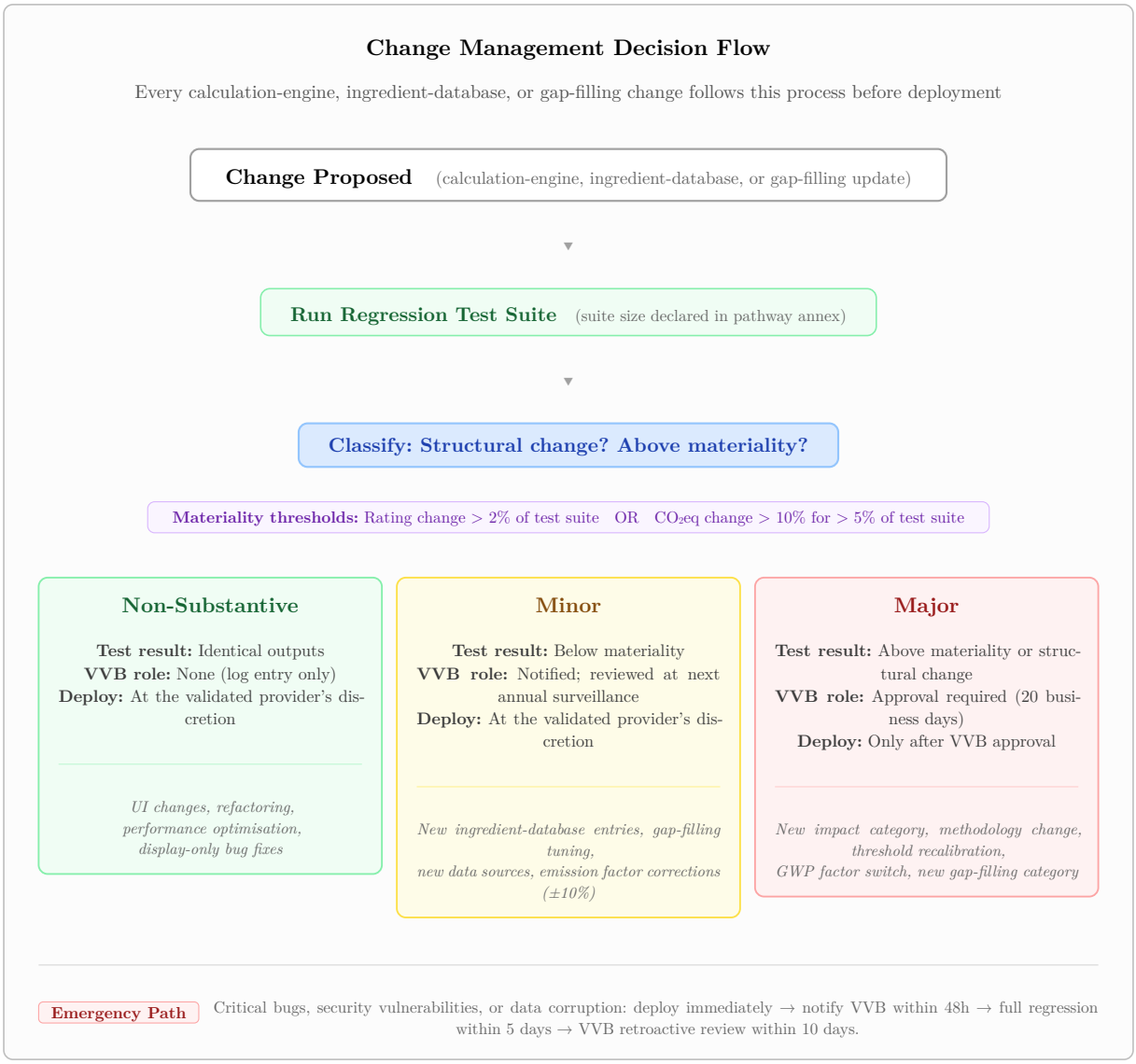

Figure 2: Three-tier change classification process. All changes run through regression testing before classification. Structural changes are always major regardless of test results.

Tier	Description	VVB Involvement
Non-substantive	No impact on assessment outputs	Notification only (recorded in change log)
Minor	Impact below materiality threshold	VVB notified; reviewed at next annual surveillance
Major	Impact above materiality threshold or structural change	VVB approval required before deployment

12.3.2 Non-Substantive Changes

Changes that have no impact on assessment outputs. No VVB action is required beyond recording in the change log.

Examples:

- User interface changes (dashboard, operator portal, reporting layout)
- Documentation and help text updates
- Internal code refactoring that does not alter calculation logic
- Performance optimisation (faster processing, reduced memory usage)
- Logging and monitoring improvements
- Development tooling and build system changes
- Bug fixes that do not affect any assessment output (e.g. display-only bugs)

Verification: Regression test suite confirms identical outputs before and after the change.

12.3.3 Minor Changes

Changes with impact below the materiality threshold (see Section 12.4). The VVB is notified and reviews these changes at the next annual surveillance.

Examples:

- Addition of new ingredients to the ingredient database (new entries, not modifications to existing)
- gap-filling module parameter tuning within existing model structure (e.g. updated transport distance defaults, revised processing energy coefficients)
- Database updates incorporating new data sources (e.g. new LCI database version, updated Agribalyse data)
- Improved synonym resolution or ingredient matching algorithms
- Updated origin distribution data (new FAO trade statistics)
- Minor corrections to emission factors (within ±10% of previous value)
- New convenience product mappings in the ingredient database

Notification: The validated provider records the change in the change log with:
- Change description and rationale
- Date of deployment
- Regression test results (before/after comparison)
- Materiality analysis (confirming impact is below threshold)

12.3.4 Major Changes

Changes with impact above the materiality threshold, or structural changes regardless of measured impact. VVB approval is required before deployment.

Examples:

- New impact category (e.g. adding biodiversity assessment)
- Methodology change (e.g. switching allocation method, modifying system boundaries)
- Rating threshold recalibration
- Benchmark recalculation
- DFU formula modification
- New gap-filling module category (adding a fundamentally new estimation module)
- Switching LCIA methodology or GWP factors (e.g. EF 3.1 to EF 4.0, or adopting IPCC AR7)
- Structural change to the gap-filling pipeline (adding, removing, or reordering GFMs)
- Changes exceeding the materiality threshold on regression testing

Process: See Section 12.6.

12.4 Materiality Threshold

12.4.1 Definition

A change is **material** if it causes either:

1. **Rating category change** for more than **2%** of assessed items in the regression test suite, OR
2. **Greater than 10% change in CO_2eq/DFU** for more than **5%** of assessed items in the regression test suite

If either condition is met, the change is classified as **major** regardless of any other consideration.

12.4.2 Calculation Method

For each item in the regression test suite:

1. Calculate the assessment result using the current (pre-change) system
2. Calculate the assessment result using the proposed (post-change) system
3. Record whether the rating category changed (A→B, B→A, etc.)
4. Calculate the percentage change in CO_2eq/DFU: `abs(new - old) / old x 100`

Aggregate across the full test suite:

- `rating_change_rate = items_with_rating_change / total_items x 100`
- `co2_impact_rate = items_with_>10%_co2_change / total_items x 100`

If `rating_change_rate > 2%` OR `co2_impact_rate > 5%`, the change is material.

12.4.3 Structural Changes

The following changes are always classified as major, regardless of regression test results:

- New impact category
- Methodology change (allocation, system boundaries, functional unit)
- Rating threshold or benchmark change
- New gap-filling module category
- GWP factor change

12.4.4 Cumulative Materiality Against the Validation Baseline

Materiality is assessed against **two references**:

1. **Release delta** — the comparison against the immediately preceding release (Sections 12.4.1–12.4.2, 12.5.4).
2. **Cumulative delta** — the comparison against the **baseline**: the system state covered by the most recent validation statement, or by the most recent VVB approval of a major change, whichever is later.

Both deltas are computed on every release using the full regression test suite and published with the release's regression results (Section 12.5.5). The cumulative delta is computed directly against the retained baseline results — not by summing per-release deltas — so items that change and later revert are counted at their net effect.

A release whose **cumulative delta** exceeds the materiality threshold of Section 12.4.1 is classified as **major** and requires VVB approval before deployment, even where its own release delta is below the threshold. Upon approval — or upon issuance of a new validation statement — the baseline resets to the approved release.

This closes the accumulation gap in release-over-release testing: successive sub-threshold releases cannot drift beyond the validity conditions of the validation statement. The release cadence remains at the provider's discretion; every release, at whatever frequency, carries the full disclosure set of Section 12.5.5.

Pre-validation operation: while a pathway is an applicant (no validation statement yet), the baseline is the pathway's declared reference run, published on its disclosure portal. The dual-delta computation and publication run identically, so the mechanism is demonstrated before the initial validation engagement.

12.5 Regression Test Suite

The framework requires every validated provider pathway to maintain a regression test suite and run it against every release. The framework defines the *requirements* the suite must meet (composition criteria, maintenance, test execution, retention, deterministic generation rules); each pathway documents its specific implementation (suite size, structure, generation seed, API endpoints, etc.) in **PA-07.1 of the pathway annex** (see `provider-pathways/TEMPLATE.md`). VVB approval of each pathway's test-suite scope, composition, and methodology is part of the initial validation audit.

The provider-level regression suite defined here and the VVB's sample-based verification of individual claims (Section 11.4) are two halves of one coverage system: the regression suite confirms the calculation system behaves correctly across the pathway's declared scope, while VVB claim sampling confirms the system is applied correctly to real market claims.

12.5.1 Framework Minimum

The regression test suite shall contain **at least 300 items** spanning **at least 3 input cases** (data-completeness or intake-mode tiers). This minimum gives statistical power for the materiality calculation and ensures coverage of the data tiers each pathway operates. The pathway may declare a larger suite in PA-07.1 if its product scope or assurance-level mix warrants it.

12.5.2 Composition Requirements

Each validated provider's regression test suite shall provide coverage across:

- All A–E rating categories with proportional representation (A through E for indicators using the full five-band scale; A/B/E where the pathway uses the simplified three-band scale)
- All major food categories the pathway covers (meat, dairy, grains, vegetables, fruits, beverages, processed foods, etc., as applicable to the pathway's product scope per PA-02.1)
- Range of data completeness levels (high / medium / low) reflecting the pathway's supported assurance levels (PA-02.4) and data intake modes
- Range of supply chain complexity (simple single-ingredient to complex multi-component)
- All major cuisine types and dish categories (for pathways that cover recipe-based assessments)
- Range of ingredient counts (3-ingredient to 20+ ingredient)
- Range of gap-filling levels (low to high)
- Range of ingredient matching tiers (predominantly Tier 1–2 to predominantly Tier 3–4)

A pathway may organise its suite into named input cases (for example by intake mode or assurance level) so that materiality can be reported per case as well as in aggregate. The pathway annex (PA-07.1) declares the suite size (≥ 300), case structure, per-case minimum item counts, and the data envelope of each case. The VVB approves the proposed structure during the initial validation audit and reviews it at each annual surveillance.

12.5.3 Test Suite Maintenance

- The test suite shall be reviewed and updated at least annually

- New products and recipes may be added when new food categories or ingredient types are introduced
- Items shall not be removed from the test suite to make a change pass the materiality threshold
- The VVB may request additions to the test suite during annual surveillance

12.5.4 Test Execution

For every release of the validated pathway (including all non-substantive, minor, and major changes):

1. Run the full regression test suite against the pre-change system
2. Run the full regression test suite against the post-change system
3. Compare results item by item
4. Calculate materiality metrics (Section 12.4.2)
5. Where the pathway organises its suite into named input cases, report materiality metrics *per input case* in addition to the aggregate
6. Log results with timestamp, pathway version (before and after), and summary statistics

Submission fidelity: Each test item shall be submitted through the same API endpoint and in the same data format as a production assessment. The regression suite shall not bypass validation, ingredient matching, or gap-filling stages. This ensures that the test measures end-to-end system behaviour, not just the calculation engine in isolation.

12.5.5 Test Results Retention and Public Display

All regression test results shall be:

- Stored with the corresponding pathway release tag
- Retained for a minimum of 5 years
- Available to the VVB at all times (not only during audits)
- **Published in summary form on the validated pathway's public verification page** (per Section 1.5.1), including: per-release run dates, materiality outcomes per input case, regression status (pass/fail), and a link to the underlying data feed. The format and visualisation are at the pathway's discretion, subject to the requirement that materiality outcomes are independently verifiable by the VVB and accessible to the public.

12.5.6 Deterministic Generation

Where test suite items are generated programmatically (rather than sampled from production data), the generation process shall be:

- **Seeded:** All random selections (ingredients, quantities, origins) use a fixed random seed so that the same generation parameters produce the same test suite
- **Versioned:** The generation code and seed are stored alongside the test suite and tagged with the suite version
- **Documented:** The generation logic (ingredient pools, quantity distributions, cuisine templates, error simulation) is described in sufficient detail for the VVB to assess representativeness

Generated items may include controlled error conditions (misspellings, ambiguous ingredient names, missing fields) to verify that the system handles realistic input variation. The proportion and types of injected errors shall be documented in PA-07.1.

12.6 Change Approval Procedures

12.6.1 Non-Substantive Changes

1. Developer implements the change
2. Regression test suite confirms identical outputs
3. Change recorded in the change log
4. Deployed at the validated provider's discretion

12.6.2 Minor Changes

1. Developer implements the change
2. Regression test suite run; materiality analysis confirms impact below threshold
3. Change recorded in the change log with classification rationale and regression results
4. VVB notified (change description, classification, regression summary)
5. Deployed at the validated provider's discretion
6. VVB reviews at next annual surveillance (Section 11.3.4)

12.6.3 Major Changes

1. The validated provider prepares a change proposal including:
   - Description of the change and rationale
   - Regression test results and materiality analysis
   - Impact assessment (which products/recipes affected, magnitude of change)
   - Proposed implementation timeline
   - Communication plan for affected participating companies
2. Change proposal submitted to VVB
3. VVB reviews the proposal (within 20 business days)
4. VVB may request:
   - Additional regression testing (expanded test suite)
   - Independent verification of materiality analysis
   - A trigger audit to assess the change in detail
5. VVB issues approval, conditional approval (with requirements), or rejection (with justification)
6. If approved, The validated provider deploys the change per the agreed timeline
7. Affected participating companies are notified before deployment
8. Post-deployment monitoring: The validated provider monitors for unexpected effects for 30 days and reports to VVB

12.6.4 Stakeholder Consultation for Major Changes

Major changes that affect rating thresholds, benchmarks, or the DFU formula additionally require stakeholder consultation per EmpCo-GOV-02 before VVB approval is sought.

12.7 Emergency Change Procedure

12.7.1 Definition

An emergency change is a change that must be deployed immediately to address:

- A critical bug causing incorrect ratings at scale
- A security vulnerability exposing assessment data
- A database corruption affecting live assessments

12.7.2 Procedure

1. The validated provider deploys the fix immediately
2. VVB notified within **48 hours** of deployment, including:
   - Description of the emergency and the fix
   - Regression test results (may be partial if time-critical)
   - Materiality analysis (if applicable)
   - Number of assessments affected before and after the fix
3. Full regression test suite run within 5 business days of deployment
4. VVB conducts retroactive review within 10 business days
5. If the VVB determines the change was not justified as an emergency, it is treated as a non-conformity per Section 9

12.7.3 Documentation

Emergency changes are flagged in the change log with:

- Emergency classification justification
- Timeline of events (discovery, deployment, notification, review)
- Retroactive regression test results
- VVB review outcome

12.8 Version Control Requirements

12.8.1 Release Tagging

Every release of a validated pathway shall be tagged with a version identifier following semantic versioning:

- **Major version** (X.0.0): Structural changes, new impact categories, methodology changes
- **Minor version** (x.Y.0): Database updates, gap-filling module parameter changes, new features
- **Patch version** (x.y.Z): Bug fixes, non-substantive changes

12.8.2 Changelog

The validated provider shall maintain a changelog for its calculation engine that records for each release:

- Version number and release date
- Change classification (non-substantive, minor, major)
- Description of changes
- Regression test summary (rating change rate, CO_2 impact rate)
- VVB notification or approval reference (for minor and major changes)

12.8.3 Database Versioning

The ingredient database shall be versioned independently of the calculation engine. Each database version shall record:

- Version number and date
- Number of new, modified, and removed entries
- Data sources added or updated
- Regression test results for the database update

12.8.4 Reproducibility

Given a calculation-engine version, ingredient-database version, and input data, the system shall produce identical assessment results. This requires:

- Pinned dependency versions for all calculation libraries
- Deterministic execution order for gap-filling modules
- Archived database snapshots for each version

12.9 Annual Change Review

At each annual surveillance, the VVB conducts a comprehensive change review as specified in Section 11.3.4. This review replaces ad-hoc trigger audits for routine (non-substantive and minor) changes.

The annual review serves as the primary mechanism by which the VVB maintains confidence that accumulated minor changes have not collectively exceeded acceptable impact levels.

PART II

Governance Documents

EmpCo-GOV-01 through EmpCo-GOV-04 (GOV-05, GOV-06 in the scheme repository)

Open Access Policy

Document: EmpCo-GOV-01 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document establishes the open access policy for the EmpCo Certification Scheme, ensuring that any company can apply for an environmental assessment under a validated pathway at the appropriate assurance level. It addresses the requirements of EU Directive 2024/825 Article r(i).

2. Principle

The EmpCo Certification Scheme is **open to all companies** producing, processing, distributing, or serving food products, without discrimination based on company size, geographic origin, industry subsector, or existing environmental performance.

3. Eligibility

3.1 Who Can Apply

Any legal entity may apply for an environmental assessment under a validated pathway, including:

- Food manufacturers and producers
- Retailers and supermarket chains
- Food service operators (restaurants, catering, institutional kitchens)
- Agricultural producers and cooperatives
- Food importers and distributors
- Start-ups and small/medium enterprises

3.2 Assurance Level Selection

Participating companies choose their assurance level based on their intended claims:

Assurance Level	Intended Use	Eligible Items
Enhanced Assurance	On-pack claims, regulated marketing	Packaged food and beverage products, fresh produce, prepared meals, ingredients, multi-ingredient products
Standard Assurance	Menu labels, operational reporting, guest communication	Food service menu items (individual dishes), recipes, buffet and menu compositions

All assessed items must be food intended for human consumption.

4. Non-Discrimination

Certified providers shall not deny access to the assessment scheme on the basis of:

- **Company size** — SMEs and large enterprises are equally eligible
- **Geographic origin** — Companies from any country may apply

- **Industry sector** — Any food industry subsector is eligible
- **Existing performance** — Companies are not required to meet a minimum environmental standard to apply; the scheme assesses and rates all products, including those with high environmental impact
- **Market share** — No preferential treatment for large-volume or existing clients
- **Competitive relationship** — Companies competing with an existing provider's clients are not excluded

5. Application Process

5.1 Steps

1. **Initial enquiry** — Company contacts a validated provider to express interest
2. **Scope agreement** — Items to be assessed, assurance level, timeline, pricing confirmed
3. **Licence agreement** — Company signs the provider's licence agreement
4. **Data submission** — Company provides data per Section 6 at the applicable assurance level
5. **Assessment** — The provider conducts the assessment per Section 7
6. **Result delivery** — Results delivered and reviewed

5.2 Timeline

Enhanced Assurance: Approximately 6 weeks from complete data submission. Priority assessment may be available at additional cost.

Standard Assurance: Automated assessments are available immediately upon recipe data submission or POS/ERP integration setup (typically 1–2 weeks for integration).

5.3 Support

The validated provider provides support throughout the data collection process, including guidance on data requirements, assistance with data gaps, and clarification calls.

6. Fees

6.1 Transparency (applicant-facing)

Each validated provider discloses its applicable fee structure **to any applicant or requesting company** before contracting — completely and without hidden charges. **The scheme does not require public publication of provider fees, and the scheme owner does not collect, aggregate, compare, or benchmark provider prices** (competition-law discipline: fee levels are each provider's unilateral commercial decision; open access operates through applicant-facing disclosure and the non-discrimination duties of Section 6.2, not through inter-provider price visibility). Providers remain free to publish their own prices unilaterally.

Enhanced Assurance fees are based on:

- Number of products to be assessed
- Product complexity (number of ingredients, supply chain complexity)
- Service level (standard vs. priority timeline)
- Volume discounts for large portfolios

Standard Assurance fees are based on:

- Subscription model (number of locations, recipe volume)

- Integration complexity (POS/ERP integration vs. manual entry)
- Service level and support

6.2 Fairness

- Fees are uniform for comparable scopes of work
- No hidden charges or discriminatory pricing
- Volume discounts are available to all companies meeting the volume thresholds
- Payment terms are standard and non-discriminatory

7. Grounds for Refusal

A validated provider may refuse an application only on the following grounds:

- The product is not a food product intended for human consumption (outside scheme scope)
- The applicant refuses to sign the licence agreement or accept scheme requirements
- The applicant has a history of deliberate data falsification under this scheme
- The applicant is subject to a current withdrawal decision (see Section 9) and the waiting period has not elapsed

Any refusal is communicated in writing with a clear justification and information about the right to appeal (see Section 10).

8. Language

Assessment services are available in English and German. Additional languages may be available upon request.

9. Review

This open access policy is reviewed annually as part of the governance review cycle.

Stakeholder Consultation

Document: EmpCo-GOV-02 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document describes ESFC's stakeholder consultation processes for the development and maintenance of the EmpCo EmpCo Certification Scheme. It addresses the requirements of EU Directive 2024/825 Article r(ii).

2. Principle

The EmpCo certification scheme is developed and maintained through meaningful engagement with relevant stakeholders, including scientific experts, industry participants, civil society, and public authorities. Stakeholder input ensures that the scheme reflects the best available science, is practicable for industry, and serves the interests of consumers and society.

3. Stakeholder Categories

Category	Examples	Role
Scientific community	LCA researchers, environmental scientists, nutritional scientists	Methodology validation, peer review, scientific currency
Industry	Food producers, retailers, food service operators	Practicability, data availability, market relevance
Civil society	Environmental NGOs, consumer organisations	Consumer interests, ambition level, transparency
Public authorities	Regulatory bodies, standardisation bodies	Regulatory alignment, compliance
Validation/verification bodies	ISO 17029 + ISO 14065 accredited VVBs	Auditability, scheme structure

4. Past and Ongoing Consultation

4.1 Scientific Foundation

The scheme's reference methodology has been developed drawing on peer-reviewed LCA literature and Swiss research institutions. Formal scientific advisory arrangements for the EmpCo will be established as part of scheme implementation.

4.2 Standards Bodies

ESFC actively participates in and aligns with:

- ISO TC 207 (Environmental Management) standards development
- PEF methodology development and PEFCR processes
- GHG Protocol working groups

- UN SDG reporting frameworks

4.3 Industry Engagement

ESFC regularly engages with industry participants through:

- Client feedback processes during and after assessments
- Industry workshops and conferences
- Bilateral consultations on methodology questions
- Annual client survey on scheme effectiveness and improvement priorities

4.4 Public and Civil Society

- Methodology documentation publicly available (public repository and transparency portal)
- Participation in public sustainability forums
- Engagement with environmental NGOs on food system sustainability
- Consumer research on label comprehension and usefulness

5. Consultation Procedures for Scheme Changes

5.1 Scheme Document Changes

Category	Description	Consultation Requirement
Editorial	Typographical corrections, formatting, clarifications without substantive change	No consultation required; documented in CHANGELOG
Minor	Procedural adjustments, updated data sources, refined thresholds within existing framework	Notification to affected stakeholders; 30-day comment period
Major	New rating categories, changed methodology, modified thresholds, new requirements for participants	Full public consultation per Section 5.2

5.2 Public Consultation Process for Major Scheme Changes

1. **Draft proposal** — ESFC publishes the proposed change with rationale
2. **Comment period** — Minimum 60 calendar days for public comment
3. **Comment publication** — Summary of comments received published (anonymised if requested)
4. **Response document** — ESFC publishes responses to all substantive comments, indicating which were adopted and why others were not
5. **Final decision** — Revised proposal published with effective date (minimum 6 months notice for major changes)
6. **CHANGELOG update** — All changes documented with version number and rationale

5.3 Calculation-Engine, Database, and Gap-Filling Changes

Changes to a validated pathway's calculation engine, ingredient database, and gap-filling logic are governed by the validated change management process in Section 12. The relationship between change management and stakeholder consultation is:

Change Management Classification	Stakeholder Consultation Requirement
Non-substantive	None
Minor	None (VVB review at annual surveillance is sufficient)
Major — technical (e.g. gap-filling module algorithm change exceeding materiality threshold)	VVB approval required; stakeholder consultation not required unless it affects thresholds or methodology
Major — affecting thresholds, benchmarks, or DFU	VVB approval required AND full public consultation per Section 5.2

5.4 Notification

Stakeholders are notified of consultation opportunities through:

- Email notification to registered stakeholders
- Publication on the ESFC website (esf-coalition.org)
- Notification in the public repository (gitlab.com/eaternity/empco) via CHANGELOG and issue tracker
- Notification to the VVB

6. Annual Stakeholder Review

NOTE — Annual stakeholder reviews will commence following scheme implementation and initial VVB certification. The first review is scheduled within 12 months of the initial validation date.

6.1 Purpose

An annual review ensures the scheme remains current, scientifically sound, and aligned with stakeholder needs.

6.2 Scope

The annual review covers:

- Methodology currency (alignment with latest scientific data and standards)
- Scheme effectiveness (feedback from participating companies at all assurance levels, CBs, consumers and food service guests)
- Complaint and appeal trends (systemic issues identified)
- Regulatory developments (new or updated EU or national requirements)
- Benchmark and threshold adequacy
- Change management effectiveness (review of changes deployed since last annual review)
- Stakeholder feedback received during the year

6.3 Participants

The annual review involves:

- ESFC management and Reference Implementer (a validated provider) technical team
- VVB representative(s)
- Invited scientific advisors

- Invited industry representatives (rotating participation)
- Consumer or NGO representative (invited)

6.4 Output

The annual review produces:

- Summary report published on the ESFC website (esf-coalition.org)
- Identified improvement actions with timelines
- Updated scheme documents (if minor changes agreed)
- Proposals for major changes (triggering public consultation per Section 5.2)

7. Stakeholder Register

Interested parties may register to receive notifications about scheme changes and consultation opportunities by contacting stakeholder@esf-coalition.org.

8. Transparency

All consultation processes, outcomes, and stakeholder review summaries are published and archived:

- Current scheme documents: Public repository (gitlab.com/eaternity/empco) and transparency portal (empco.eaternity.org)
- Consultation records: Published on the transparency portal
- Annual stakeholder review summary: Published within 2 months of the review

9. Contact

Stakeholder Engagement:
Email: stakeholder@esf-coalition.org
Web: esf-coalition.org

Impartiality Policy

Document: EmpCo-GOV-03 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document establishes ESFC's commitment to impartiality in the operation of the EmpCo scheme and the relationship between ESFC, validated providers, and the independent Validation/Verification Body.

2. Principle

The credibility of environmental assessments delivered under EmpCo depends on the impartiality and objectivity of assessment processes at all assurance levels. Each validated provider commits to conducting all assessments based solely on scientific evidence and the scheme's methodology, without bias towards or against any participating company, product, recipe, or outcome.

3. Separation of Roles

3.1 Scheme Owner vs. Validation/Verification Body

Function	Responsible Party	Independence
Scheme development and maintenance	ESFC (Scheme Owner)	ESFC develops the rules
Assessment execution (all assurance levels)	Certified provider	The provider applies the rules uniformly across all assurance levels
Change management	Implementer proposes; ESFC classifies; VVB approves major changes	Implementer

Function	Responsible Party	Independence
		classifies and deploys changes under ESFC/VVB oversight
Certification and surveillance	VVB (independent third party)	VVB verifies that validated providers follow the rules

The VVB shall be independent of both ESFC and the validated provider (see EmpCo-VVB-01):

- No financial interest in ESFC or the validated provider
- No shared management or governance
- No commercial relationship beyond the certification contract
- No involvement in the development of the scheme (advisory role is permitted)

3.2 Assessment Impartiality

Each validated provider ensures that all assessments are conducted impartially at all assurance levels:

Enhanced Assurance (where expert review is used):

- Analysts are assigned to assessments without consideration of the participating company's identity or commercial relationship with the validated provider
- No analyst may assess a product in which they have a personal financial interest
- Peer reviewers are different persons from the original analyst
- Senior QA reviewers are not involved in the commercial relationship with the participating company

Standard Assurance (automated pipeline):

- The automated pipeline applies the same calculation logic to all participating companies without differentiation

- No manual override of automated results is permitted for commercial reasons
- Ingredient matching algorithms do not incorporate participating company identity as an input
- Gap-filling defaults are uniform across all participating companies (no company-specific adjustments outside of provided data)
- Changes to the automated pipeline are versioned and auditable, ensuring that all participating companies are treated equally

All assurance levels:

- Assessment results are determined solely by the data and methodology, not by commercial considerations

4. Conflict of Interest

4.1 Identification

Each validated provider identifies and manages potential conflicts of interest, including:

- Financial relationships with participating companies beyond the assessment fee
- Personal relationships between provider staff and participating company representatives
- The provider's own commercial interest in favourable or unfavourable assessment outcomes
- Consultancy or advisory services provided to participating companies on product development

4.2 Management

When a conflict of interest is identified:

- The conflict is documented
- The affected person is excluded from the assessment or decision
- An alternative person is assigned
- The VVB is informed if the conflict could affect certification

4.3 Consultancy vs. Assessment

A validated provider may provide consultancy services (e.g. improvement recommendations) to participating companies, but:

- Consultancy and assessment functions are separated (different personnel where possible)
- Consultancy advice does not influence the outcome of assessments
- Assessment results are not conditioned on purchasing consultancy services
- The VVB is informed of any consultancy relationships with participating companies

5. Transparency

5.1 Methodology

The framework methodology is fully published in the public repository (gitlab.com/eaternity/empco) and available to all parties. Scheme documents, per-pathway changelogs, and regression test summaries are accessible via the transparency portal (empco.eaternity.org). The framework is methodology-neutral; each validated pathway publishes its own calculation engine and gap-filling logic to a level of documentation sufficient for independent VVB audit (see Section 5.12 of the methodology document).

5.2 Fee Structure

Fees are published and uniform. No participating company receives preferential pricing based on expected or desired assessment outcomes.

5.3 Results

Assessment results are determined by data and methodology. Participating companies may not negotiate or influence their rating. If a company disagrees with a result, the complaint and appeal procedures apply (see Section 10).

6. VVB Oversight

The VVB provides independent oversight of the validated provider's impartiality:

- Annual review of impartiality procedures during surveillance audits
- Access to conflict of interest records
- Verification that assessment outcomes are consistent with input data
- Complaint investigation where impartiality concerns are raised

7. Review

This impartiality policy is reviewed annually as part of the governance review cycle and during VVB surveillance audits.

Governance Structure

Document: EmpCo-GOV-04 **Version:** 0.4.1-draft-vv **Date:** 2026-07-14

1. Purpose

This document describes the governance structure of the ESFC EmpCo Certification Scheme, defining roles, responsibilities, and decision-making processes.

2. Overview

The scheme governance involves four principal parties (the Accreditation Body, ESFC as Scheme Owner, the Validation/Verification Body, and the Certified Provider) plus the traders bound under each provider's pathway. The figure below shows how they relate.

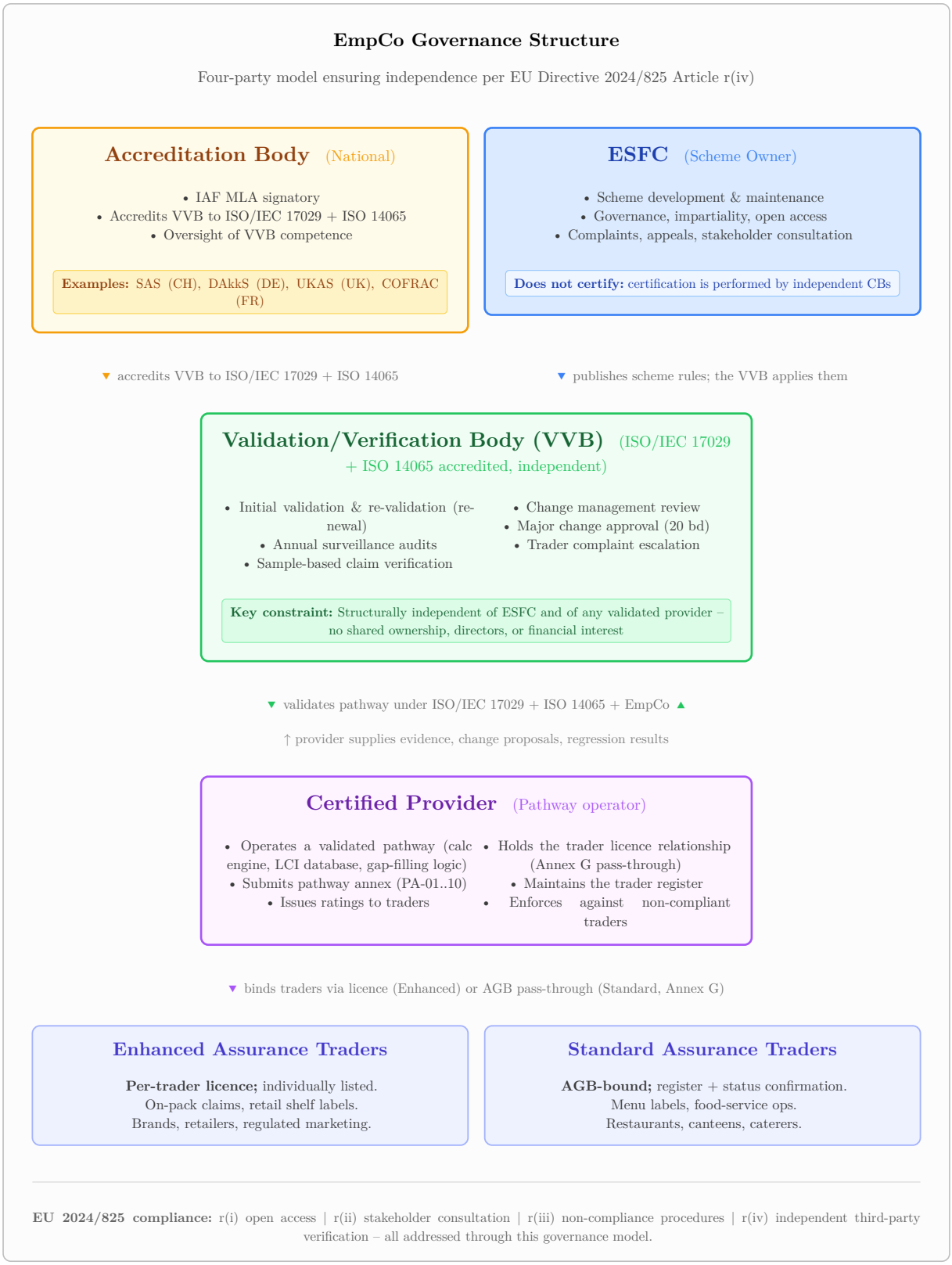

Figure 3: Four-party governance model. The accreditation body accredits the VVB; ESFC owns the scheme but does not certify; the VVB certifies the provider's pathway under ISO/IEC 17029 + ISO 14065; the provider holds the trader licence relationship and is responsible for downstream binding. Traders are bound at one of two tiers per their assurance level (§1.2.2).

3. Scheme Owner: European Sustainable Food Coalition (ESFC)

3.1 Role

The **European Sustainable Food Coalition (ESFC)** is the Scheme Owner — the organisation responsible for developing, publishing, and maintaining the certification scheme. Contact: esf-coalition.org.

3.2 Responsibilities

Function	Description
Scheme development	Drafting and updating all scheme documents
Methodology stewardship	Defining LCA methodology, data, calculation, and QA requirements that certified systems must meet
Governance & impartiality	Maintaining the impartiality policy and separation of roles (scheme owner, provider, VVB)
Change management oversight	Reviewing provider-proposed changes and approving major changes per Section 12
Stakeholder engagement	Managing consultation processes and annual reviews
Complaint handling	Processing complaints and referring appeals
VVB liaison	Coordinating with the VVB for audits, change approvals, and corrective actions
Transparency	Publishing scheme documentation and consultation records

3.3 Decision Authority

ESFC has decision authority over:

- Scheme content (methodology, thresholds, procedures) — subject to stakeholder consultation for major changes
- Change classification (non-substantive, minor, major) for provider-proposed changes — subject to VVB review at annual surveillance
- Commercial terms of scheme participation. Scheme-use fees, where the ESFC levies any, are set in a **published annual fee schedule outside the normative scheme documents**; they are never a condition of admission, licence issuance, or licence maintenance, and collective-tier fees are structured per provider, volume-tiered, so that no per-trader marginal cost arises. Provider pricing transparency per GOV-01 Section 6 (applicant-facing; narrowed 2026-07-25 per the scheme owner's competition-law analysis, docs/legal-position-paper.md Q11)
- Selection of the VVB (from accredited candidates)

ESFC does **not** have authority over:

- Certification decisions (granted, suspended, withdrawn) — this is the VVB's exclusive authority
- VVB audit findings and non-conformity classifications
- Major change deployment — requires VVB approval (see Section 12)
- Individual assessment outcomes — these are determined by the validated provider's system based on data and methodology
- Appeal outcomes where the VVB is the reviewer

4. Certification Committee (Charter)

4.1 Role and Mandate

The **Certification Committee** is the scheme-governance organ of ESFC that:

- decides on **admission** of applicants to the scheme against the documented, non-discriminatory criteria of GOV-01 (criterion (i));
- **issues, maintains, suspends, and withdraws label licences** (criterion (iii)) for providers and Enhanced-assurance traders, on the basis of the VVB's validation statements, verification statements, and findings;
- decides on category suspensions where the VVB reports systematic discrepancies (see EmpCo-09 and EmpCo-11);
- exercises the scheme's **scientific function** (criterion (ii)): institutionalised expert consultation on the scientific content of scheme requirements — methodology floor and guardrails, the Layer-2 question list, calibrations. It reviews and publishes **calibration guidance** per Layer-2 question and receives **anonymised cross-pathway summaries** of Layer-2 conclusions to check consistency. Outputs are recommendations and GOV-02 submissions — with one **scoped veto** (converged with the ESFC Rulebook): changes to the methodology floor, the Layer-2 question list, and calibration guidance additionally require the Committee's approval; on everything else it is advisory.

A **label licence** is valid for 3 years, conditional on a passing annual verification statement, and renewable following full re-validation and extended verification before the end of the cycle.

The Committee is **one organ with two procedurally separated functions**. In its **licence function** it is a decision organ, not an assessment organ: the VVB assesses; the Committee decides on licence status, bound by the bright-line rule (Section 4.2). In its **scientific function** it may exercise scientific judgement — but only at the level of scheme requirements (standard-setting), never as conformity assessment of a specific pathway (the VVB's role). The separation lives in the procedure, not in two rosters: licence decisions are bound to the VVB record regardless of who sits. ESFC Working-Group documents refer to this organ in its scientific function as the "Scientific Committee" — it is the same body.

4.2 Bright-Line Rule: No Re-Assessment

The Committee shall not re-assess the scientific or technical substance of any validation or verification engagement. Its decision inputs are limited to: the VVB's validation statement(s) including validity conditions; the VVB's annual and trigger verification statements; the VVB's documented findings and non-conformity classifications (per the ladder in EmpCo-09); outcomes of complaint and appeal procedures (EmpCo-10); and the documented admission criteria of GOV-01.

The rule binds in **both directions**:

1. The Committee **cannot issue or maintain** a label licence against a negative or withdrawn VVB statement, or where the VVB reports an unresolved major non-conformity.
2. The Committee **cannot refuse, suspend, or withdraw** a label licence against a positive VVB statement, except on documented grounds arising from the scheme's open-access criteria (criterion (i)) or its suspension/withdrawal rules (criterion (iii)) — e.g. refusal grounds under GOV-01 Section 7, label-misuse under EmpCo-08, or non-payment of contractually owed engagement costs or scheme-use fees (scheme-use fees under the published Fee Schedule are conditions of participation, never of conformity — Rulebook Section 13.5; GOV-01 Section 6). Such grounds shall be stated in writing in the decision.

This bright-line rule is what keeps the Committee — an organ of the scheme owner — from becoming a self-certification back door (Directive 2024/825, Annex I point 2a): the substantive conformity judgement always rests with the accredited third party.

4.3 Composition

Seat	Number	Requirement
Independent chair	1	No seat on the ESFC board; and, during the preceding 3 years, no financial interest in, employment by, or governance role at **any organisation with a commercial interest in licence outcomes — whether or not an ESFC member**: licensed or applicant providers, the VVB, traders using EmpCo claims (including any organisation in a provider's trader register), and their affiliates. Ties to non-commercial ESFC members (civil-society organisations, academic institutions) are disclosed in the conflict-of-interest register and are not in themselves disqualifying
Scientific / civil-society members	≥ 3	Independent LCA or food-systems scientists, consumer- or environmental-organisation representatives. No voting member may have a commercial interest in licence outcomes (same bar as the chair, applied at appointment)

There are **no provider or trader voting seats**: every voting member is independent of licence outcomes, so no commercially interested party ever votes on a licence — which strengthens the self-certification defence and collapses most of the recusal machinery. Providers and traders hold **standing hearing rights** instead: before any decision concerning them, the affected party is invited to be heard (GOV-05), and their observations on scientific-function matters enter as consultation submissions. Members are appointed by the ESFC board for renewable 3-year terms, staggered so that no more than half of the seats turn over in any year. VVB personnel shall not sit on the Committee. The appointment procedure and current composition are published on the transparency portal.

4.4 Quorum and Decision Rules

- **Quorum:** a majority of voting members, which must include the chair (or, where the chair is recused or absent, the acting chair elected under GOV-05).
- **Decisions** are taken by simple majority of votes cast — abstentions and recusals do not count as votes cast; the (acting) chair holds the casting vote in the event of a tie.
- Decisions may be taken at meetings or by documented written procedure; suspension and withdrawal decisions require a convened meeting (physical or remote).

4.5 Conflict of Interest and Recusal

Each member declares conflicts of interest for every agenda item before deliberation. A member shall recuse themselves from any decision concerning: their own organisation (including its own licence); a competitor of their organisation where the decision confers a market advantage; or any party with which they have a financial or close personal relationship. The chair rules on contested recusals; recusals and rulings are recorded in the minutes. Recused members do not receive deliberation documents for the item and do not count towards quorum for it.

4.6 Timelines

Decision	Deadline
Admission decision (contested refusals under GOV-01 Section 7)	Within 20 working days of referral
Label-licence issuance	Within 20 working days of receipt of the complete decision file (validation statement and, where applicable, verification statement)
Licence maintenance after annual verification	Within 15 working days of receipt of the annual verification statement
Suspension decision on a VVB finding warranting it	Within 10 working days of receipt of the finding; where the finding indicates ongoing consumer-facing misleading claims, the chair may order a provisional suspension effective immediately, to be confirmed or lifted by the Committee within 10 working days
Withdrawal decision	Within 20 working days of the expiry of the corrective-action period per EmpCo-09

If a deadline cannot be met, the affected party is informed in writing with the reason and a new date.

4.7 Publication of Decisions

All Committee decisions are published on the public transparency portal, listing for each licensee: the VVB and its accreditation ID (e.g. D-VS-…); the validation-statement ID and current verification-statement ID; the licence ID, status (issued / suspended / withdrawn / expired), and validity period; the decision date and, for suspensions and withdrawals, the grounds category. Suspensions and withdrawals are published without delay; the licensee is notified in writing before publication.

4.8 Appeals

Any party affected by a Committee decision (admission refusal, licence refusal, suspension, withdrawal) may appeal per EmpCo-10. Appeals are heard by persons who took no part in the original decision. An appeal does not suspend the effect of a suspension or withdrawal decision unless the appeal body orders otherwise.

4.9 Operationalisation

The operational rules implementing this charter — secretariat and decision files, meetings and voting (the collegium decides by simple majority of votes cast; the chair holds one vote plus the casting vote), written procedure, the acting-chair rule, urgency ratification, and the conflict-of-interest register — are set out in **GOV-05 (Certification Committee Rules of Procedure)**; the constitution materials (role profiles, public call, board-resolution template, first-meeting agenda) in the scheme repository's committee constitution pack. The scientific-review process — Layer 1 framework alignment and the Layer 2 fixed-question review (eight questions, Rulebook v0.4 §6.3), both assessed by the VVB or independent reviewers and only **administered** by the scheme owner (the Commission's Q&A requires the scheme owner and the monitoring third party to be separate legal entities) — is set out in **GOV-06 (Scientific Review Process)** in the scheme repository.

5. Licensed Provider

5.1 Role

A **validated provider** is an organisation that operates a calculation system used to produce environmental assessments under EmpCo. Each provider submits a **provider pathway annex** following the canonical template at `provider-pathways/TEMPLATE.md`, which the VVB evaluates for provider-level certification.

The framework is methodology-neutral, so multiple providers may be certified concurrently. Each provider's pathway annex is its own document; the framework on `main` does not privilege any single provider.

5.2 Responsibilities (provider-side)

Function	Description
Pathway documentation	Maintaining the provider pathway annex (PA-01 through PA-08) and submitting updates per the change management process
Methodology operation	Operating the LCA methodology, ingredient database, calculation engine, and gap-filling logic described in the pathway annex, in conformance with the EmpCo scheme floor
Assessment execution	Conducting environmental assessments for participating companies (traders) at the assurance levels declared in PA-02
Quality assurance	Operating QA processes that achieve the EmpCo outcome requirements (Section 7.4)
Change management (proposer)	Classifying, testing, and proposing changes to the pathway per Section 12, subject to ESFC classification review and VVB approval for major changes
Regression test suite	Maintaining and running the pathway's regression test suite per Section 12.5
Evidence files	Producing evidence files for every certified assessment per Section 6.5
VVB liaison	Coordinating with the VVB for audits, major change approvals, and corrective actions

5.3 Key Personnel (provider-side)

Each provider shall demonstrate role coverage equivalent to:

Role	Responsibility
Managing Director / equivalent	Overall responsibility for pathway compliance, VVB relationship on provider side
Head of Science / Chief Scientist	Methodology integrity, scientific currency, standards alignment
Head of Quality	QA framework operation, provider-side complaint handling, non-conformity management

Role	Responsibility
Lead Analyst	Assessment execution, analyst supervision, training
Head of Engineering	Calculation engine operation, change management execution

6. Validation/Verification Body (VVB)

6.1 Role

The VVB is an independent organisation accredited to ISO/IEC 17029 + ISO 14065 (ISO 14067 product scope) via the Regulation (EC) No 765/2008 mechanism, that validates and verifies a provider's environmental assessment system against this scheme.

6.2 Responsibilities

- Conducting initial validation, annual surveillance, and re-validation (renewal) audits
- Sample-based verification of assessments at both assurance levels
- Reviewing the change log and regression test results at each annual surveillance
- Approving or rejecting major change proposals
- Classifying non-conformities and deciding on corrective action requirements
- Reporting validation and verification statements to the Certification Committee, which decides on label-licence status (grant, maintain, suspend, withdraw)
- Processing appeals against ESFC's complaint decisions
- Maintaining independence and impartiality

6.3 Independence

The VVB shall be fully independent of both ESFC and the validated provider (see EmpCo-VVB-01):

- No ownership, financial, or governance relationship with ESFC or the validated provider
- Audit teams have no conflict of interest with ESFC, the validated provider, or participating companies
- VVB's certification decisions are not influenced by ESFC or the validated provider

6.4 Selection and Appointment

The VVB is selected by ESFC based on:

- ISO/IEC 17029 + ISO 14065 accreditation (ISO 14067 product scope)
- LCA and food sector expertise
- Geographic suitability (European presence)
- Cost-effectiveness

The VVB appointment is reviewed at each re-validation cycle (renewal) (every 3 years). ESFC may change CBs, subject to ensuring continuity of certification.

7. National Accreditation Body

7.1 Role

The national accreditation body (e.g. SAS in Switzerland, DAkkS in Germany) accredits the VVB to ISO/IEC 17029 + ISO 14065 (ISO 14067 product scope) under Regulation (EC) No 765/2008, providing the highest level of assurance of the VVB's competence and impartiality.

7.2 Oversight

The accreditation body:

- Assesses and accredits the VVB
- Conducts periodic assessments of the VVB
- Handles complaints about the VVB that cannot be resolved through the scheme's appeal procedures

8. Advisory Functions

8.1 Scientific Advisory

ESFC may engage scientific advisors for:

- Methodology review and development
- Peer review of benchmarks and thresholds
- Review of new impact categories or methodological changes

Advisory input is documented in consultation records.

8.2 Stakeholder Input

Stakeholders provide input through the consultation procedures defined in EmpCo-GOV-02.

9. Document Control

9.1 Versioning

All scheme documents are versioned using Semantic Versioning (MAJOR.MINOR.PATCH):

- **MAJOR:** Changes requiring re-validation (renewal) or fundamentally altering the scheme
- **MINOR:** Substantive additions or modifications (subject to consultation for major changes)
- **PATCH:** Editorial corrections and clarifications

9.2 Change Management

Changes to scheme documents follow the process defined in EmpCo-GOV-02, Section 5.

Changes to a validated pathway's calculation engine, ingredient database, and gap-filling logic follow the validated change management process defined in Section 12.

9.3 Publication

The authoritative version of all scheme documents is published in the public repository (gitlab.com/eaternity/empco) and available for download from the transparency portal (empco.eaternity.org). The VVB and all participating companies are notified of changes.

10. Legal Structure

- The **European Sustainable Food Coalition (ESFC)** is the scheme owner and publisher (esf-coalition.org)
- The certification scheme is a voluntary scheme owned and administered by ESFC
- Participating companies enter into an assessment-and-licence agreement with a validated provider

- The VVB–ESFC relationship is governed by a scheme-certification contract; the VVB–provider relationship is governed by a separate certification contract
- The scheme operates under European law; specific jurisdiction for provider and trader contracts is determined by the relevant entity's country of registration

11. Review

The governance structure is reviewed:

- Annually, as part of the stakeholder review
- At each re-validation cycle (renewal) (every 3 years)
- When significant organisational changes occur at ESFC or any validated provider

PART III

Validation/Verification Body Documents

EmpCo-VVB-01 through EmpCo-VVB-03

Validation/Verification Body Requirements

Document: EmpCo-VVB-01 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document specifies the requirements for Validation/Verification Bodies (CBs) operating under the ESFC EmpCo Certification Scheme. It addresses the requirements of EU Directive 2024/825 Article r(iv).

2. Accreditation

2.1 Mandatory Accreditation

The VVB shall hold valid accreditation to **ISO/IEC 17029:2019** in conjunction with **ISO 14065:2020**, with ISO 14067 product scope, from the national accreditation body of an EU or EFTA Member State operating under Regulation (EC) No 765/2008 and subject to EA peer evaluation.

2.2 Scope of Accreditation

The VVB's accreditation scope shall cover:

- Validation and verification of product-level greenhouse gas statements per **ISO 14067:2018** (carbon footprint of products), with engagements conducted per **ISO 14064-3:2019**

The scope shall cover, or be extendable to cover, validation of a CFP systematic approach (ISO 14067 Annex C.3.4 — one system producing CFPs for many products), which is the shape of a validated provider pathway under this scheme. If the VVB's existing accredited scope covers ISO 14067 product verification but not systematic-approach validation, the VVB shall demonstrate a plan to extend its scope with its accreditation body before undertaking a pathway validation.

Finding (scope-annex review, 2026-07-09): all sixteen DAkkS scope annexes were read in full; at product level (ISO 14067) each is accredited for verification only ("Verifizierungsstelle"), with no additional programmes listed. Validation is accredited at project level (ISO 14064-2) for 10 of 16, so extending a product scope to validation is an established procedure within the same standards family. Consequence: the annual verification engagement is deliverable under existing accreditations as-is; the one-time system validation will typically require a scope extension or an alternative accredited structuring — the RFP requests each bidder's route.

3. Independence and Impartiality

3.1 Structural Independence

The VVB shall be structurally independent of ESFC and of every validated provider:

- No ownership, equity, or financial stake in ESFC or any validated provider (or vice versa)
- No shared directors, officers, or governance members
- No commercial relationships with ESFC or validated providers beyond the certification contract
- No financial interest in the assessment outcomes of validated providers' clients

3.2 Operational Impartiality

The VVB shall:

- Assign audit teams free from conflicts of interest with any validated provider or participating companies
- Not accept gifts, hospitality, or incentives from a validated pathway or its clients that could compromise impartiality
- Make certification decisions through authorised personnel who were not involved in the audit execution
- Maintain documented impartiality risk assessment and management procedures per ISO/IEC 17029 and ISO 14065

3.3 Disclosure

The VVB shall disclose to ESFC, the validated provider, and the accreditation body:

- Any potential conflicts of interest identified
- Any relationships with participating companies that could affect impartiality
- Any changes to its organisation that could affect independence

4. Technical Competence

4.1 Organisational Competence

The VVB shall demonstrate:

- Experience in certifying environmental or sustainability schemes (minimum 3 years)
- Technical knowledge of Life Cycle Assessment methodology
- Understanding of the food industry and food supply chains
- Familiarity with ISO 14040/14044 requirements
- Capability to conduct system-level certification (not just product testing)
- Capability to audit automated software pipelines (for automated assessment verification)
- Capability to review regression test suites and change management processes

4.2 Audit Team Competence

See EmpCo-VVB-02 for detailed auditor qualification requirements.

4.3 Continuous Professional Development

The VVB shall ensure that audit team members maintain their competence through:

- Regular training on LCA methodology updates
- Attendance at relevant conferences or workshops
- Internal knowledge sharing and calibration exercises
- Review of audit performance and feedback

5. Operational Requirements

5.1 Audit Capacity

The VVB shall have the capacity to:

- Conduct the initial validation audit within a reasonable timeframe (target: within 8 weeks of engagement)
- Conduct annual surveillance audits within the scheduled period
- Respond to trigger audit requests within 4 weeks

- Review major change proposals within 20 business days
- Provide audit reports within 15 business days of audit completion

5.2 Geographic Presence

The VVB shall have:

- An office or representation in Switzerland or the EU (for on-site audits at the validated provider's primary office)
- Capability to conduct audits in English (primary language of scheme documentation)
- Capability to conduct audits in German (operational language of the audited provider)

5.3 Confidentiality

The VVB shall:

- Maintain strict confidentiality of all information obtained during audits
- Not disclose the validated provider's proprietary data or participating companies' product or recipe data to third parties
- Implement adequate data protection measures (encrypted storage, access controls)
- Sign appropriate confidentiality agreements

5.4 Record Keeping

The VVB shall:

- Maintain complete audit records for a minimum of 5 years
- Make records available to the accreditation body upon request
- Provide copies of audit reports and findings to the validated provider

6. Certification Process

6.1 Initial Certification

The VVB shall conduct the initial validation following the procedure in EmpCo-VVB-03, including:

- Document review (scheme documentation, methodology, procedures)
- System audit (on-site at the validated provider), covering both assurance levels
- Pilot sample verification: Enhanced Assurance (20–30 assessments) and Standard Assurance (30–50 assessments)
- Automated pipeline validation (see EmpCo-VVB-03, Section 7)
- Change management process review (see EmpCo-VVB-03, Section 8)
- Gap analysis and findings report
- Certification decision

6.2 Surveillance

The VVB shall conduct annual surveillance per Section 11, including:

- System audit (annual), covering both assurance levels
- Sample-based verification (annual): Enhanced and Standard Assurance assessments
- Change management review (standing item — see Section 11.3.4)
- Automated pipeline and QA effectiveness review
- Corrective action follow-up

6.3 Re-Certification

The VVB shall conduct re-validation (renewal) every 3 years, encompassing the full scope of the initial validation with extended sample verification.

6.4 Decision Making

The VVB's certification decisions (grant, maintain, suspend, withdraw) shall be:

- Made by authorised personnel not involved in the audit execution
- Based on objective evidence documented in audit reports
- Communicated to the validated provider in writing with full justification
- Subject to the appeal procedure in Section 10

6.5 Change Management Involvement

The VVB's role in the validated change management process includes:

- Receiving notifications for all minor changes
- Reviewing and approving or rejecting major change proposals within 20 business days
- Reviewing the complete change log at each annual surveillance
- Verifying regression test suite adequacy and results
- Assessing whether cumulative minor changes collectively exceed acceptable impact levels

7. Reporting

The VVB shall provide:

Report	Frequency	Recipient
Audit report with findings	After each audit	the validated provider
Certification decision	After each audit	the validated provider
Annual surveillance summary	Annually	the validated provider, public summary
Non-conformity notifications	As they arise	the validated provider
Major change approval/rejection	Per change management process	the validated provider

8. Contract

The relationship between the validated provider and the VVB is governed by a certification contract specifying:

- Scope of certification services
- Audit schedule and procedures
- Change management review responsibilities and timelines
- Fees and payment terms
- Confidentiality obligations
- Liability and insurance
- Termination conditions
- Applicable law and dispute resolution

9. VVB Change

If a validated provider changes its VVB:

- The outgoing VVB provides all relevant records to the incoming VVB
- The incoming VVB reviews the certification history before assuming responsibility
- Continuity of the validation statement and label licence is maintained if the incoming VVB accepts the transfer
- A transition audit may be required at the incoming VVB's discretion

Auditor Competencies

Document: EmpCo-VVB-02 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document specifies the competency requirements for auditors conducting certification and surveillance audits under the ESFC EmpCo Certification Scheme.

2. Audit Team Composition

Each audit team shall include at minimum:

Role	Number	Primary Responsibility
Lead Auditor	1	Audit planning, execution, reporting; audit management per ISO 19011
Technical Expert (LCA)	1 (may be same person)	LCA methodology review, calculation verification, data quality assessment

For complex audits (initial validation, re-validation (renewal)), the team may also include:

Role	Number	Primary Responsibility
Food Industry Expert	0–1	Food supply chain knowledge, ingredient data verification
IT/Software Expert	0–1	Calculation engine verification, database integrity, automated pipeline validation, change management review

3. Lead Auditor Requirements

3.1 Education

- University degree (Bachelor's or higher) in environmental science, engineering, natural sciences, food science, or a related field

3.2 Audit Qualifications

- Qualified lead auditor per ISO 19011:2018
- Minimum 3 years of experience as a lead auditor in certification auditing
- Experience in auditing management systems or product certification schemes

3.3 Technical Knowledge

- Working knowledge of Life Cycle Assessment principles (ISO 14040/14044)
- Understanding of environmental labelling and certification schemes
- Familiarity with ISO/IEC 17029 and ISO 14065 requirements for validation/verification bodies
- General understanding of the food industry and food supply chains

3.4 Audit Experience

- Minimum 10 audits conducted as lead auditor

- At least 2 audits in the environmental or sustainability domain

4. Technical Expert (LCA) Requirements

4.1 Education

- University degree (Master's or higher) in environmental science, environmental engineering, or a related field with specialisation in LCA
- **Preferred:** PhD in LCA or environmental assessment

4.2 LCA Competence

- Minimum 3 years of professional experience conducting or reviewing Life Cycle Assessments
- Demonstrated expertise in at least two of the following:
  - ISO 14040/14044 LCA methodology
  - Product Environmental Footprint (PEF) methodology
  - GHG Protocol product-level accounting
  - Food-specific LCA (agriculture, food processing, food supply chains)

4.3 Specific Knowledge Areas

The LCA technical expert shall be competent in:

Area	Required Knowledge
System boundaries	Cradle-to-grave assessment, cut-off criteria, scope definition
Functional units	Appropriate selection and application, including nutritional functional units
Allocation	Economic, mass, and energy allocation for multi-output systems
Impact assessment	GWP100 characterisation, water scarcity methods (AWARE), uncertainty
Data quality	Data quality indicators, primary vs. secondary data, gap-filling approaches
Food systems	Agricultural production systems, food processing, supply chains, seasonality
Database knowledge	Standard LCI databases (e.g. Agribalyse) or equivalent

4.4 Verification Skills

The LCA technical expert shall be capable of:

- Independently recalculating a CO_2eq/DFU value from input data at both assurance levels
- Evaluating whether database matches (ingredient linkages) are appropriate — including automated matches
- Assessing the scientific validity of gap-filling approaches, including automated gap-filling module outputs
- Identifying implausible results or systematic errors
- Evaluating the sensitivity of results to key assumptions
- Comparing Enhanced and Standard Assurance outputs for the same product to assess automated pipeline accuracy

5. Food Industry Expert Requirements (if applicable)

5.1 Education and Experience

- Degree in food science, food technology, agricultural science, or related field
- Minimum 3 years of professional experience in the food industry or food certification

5.2 Knowledge Areas

- Food production and processing methods
- Food supply chain management
- Food safety and quality management systems
- Ingredient sourcing and traceability
- Food labelling regulations

6. IT/Software Expert Requirements (if applicable)

6.1 Education and Experience

- Degree in computer science, software engineering, or related field
- Minimum 3 years of experience in software verification, testing, or auditing

6.2 Knowledge Areas

- Software quality assurance methods
- Data integrity and database management
- Calculation engine verification (input-output testing)
- Version control and change management

6.3 Automated Pipeline Competencies

The IT/Software Expert auditing automated assessment pipelines shall additionally be competent in:

- Automated text matching and classification algorithms (for ingredient matching verification)
- API testing and automated pipeline validation
- Statistical quality monitoring (outlier detection, drift detection, false positive/negative analysis)
- POS/ERP data integration and mapping processes
- Automated QA system evaluation (flag trigger rates, escalation compliance)

6.4 Change Management Review Competencies

The IT/Software Expert (or Lead Auditor with equivalent competence) shall be competent in:

- Reviewing regression test suites (composition, coverage, adequacy)
- Evaluating regression test results and materiality analyses
- Assessing change classification decisions (non-substantive, minor, major)
- Reviewing semantic versioning and changelog practices
- Understanding the relationship between software changes and assessment output impact

7. General Requirements

7.1 Impartiality

All audit team members shall:

- Declare any potential conflicts of interest before each audit assignment
- Not have been employed by or provided consultancy to the validated provider or ESFC in the past 2 years
- Not have a financial interest in the validated provider, ESFC, or any participating company
- Not have personal relationships with the validated provider's or ESFC's management or key technical staff that could compromise objectivity

7.2 Confidentiality

All audit team members shall:

- Sign confidentiality agreements before accessing the validated provider's data
- Not disclose any information obtained during audits to third parties
- Maintain secure handling of all audit documentation

7.3 Language

- Audit reports shall be in English
- At least one team member shall be proficient in German (for reviewing operational documents and interviewing staff)

8. Competency Maintenance

8.1 Continuing Education

Auditors shall maintain their competence through:

- Minimum 16 hours per year of relevant continuing professional development
- Staying current with ISO 14040/14044 and related standards updates
- Awareness of developments in EU environmental labelling regulation (EmpCo, PEF)
- Knowledge of current LCA methodological developments

8.2 Performance Review

The VVB shall conduct regular performance reviews of auditors, including:

- Review of audit report quality
- Feedback from audited organisations
- Calibration exercises (consistency between auditors)
- Periodic witnessed audits by senior VVB staff

9. Verification by the Certified Implementer

The validated provider may:

- Request the CVs of proposed audit team members before an audit
- Raise objections to specific auditors on justified grounds (conflict of interest, insufficient competence)
- Provide feedback on audit team performance to the VVB

The validated provider shall not:

- Veto audit team assignments without legitimate grounds
- Attempt to influence audit findings through auditor selection

Engagement Methodology Companion

Document: EmpCo-VVB-03 **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

1. Purpose

This document describes what the Validation/Verification Body (VVB) concretely evaluates during certification and surveillance audits of a validated provider's environmental assessment system.

2. Audit Types

Audit Type	When	Duration	Scope
Initial validation	Before first label licence	3–5 days	Full system + pilot sample
Annual surveillance	Years 1 and 2	2–3 days	System review + sample verification + change management review
Re-validation (renewal)	Every 3 years	3–5 days	Full system + extended sample + full change review
Trigger audit	As needed	1–2 days	Focused on specific change

3. System Audit

The system audit evaluates whether a validated provider pathway operates in conformity with this certification scheme and the normative references in Section 2.

3.1 Methodology Conformity

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
System boundaries	Cradle-to-grave correctly defined and applied	Methodology documentation, sample assessment reports
Functional unit	DFU correctly calculated per formula in Section 5	DFU calculation code, sample calculations
Cut-off criteria	ISO 14044/PEF compliant (<1% mass/energy, <5% cumulative)	Cut-off documentation, excluded flows
Allocation methods	Economic/mass/energy allocation correctly applied	Allocation procedures, examples
GWP factors	EF 3.1 / IPCC AR6 factors correctly implemented (CH_4 fossil=29.8, CH_4 biogenic=27.0, N_2O=273); fossil/biogenic/LULUC sub-indicators separated	Calculation engine code, test results
Impact categories	Climate change (EF 3.1) correctly implemented; any additional indi-	Impact assessment code, reference comparisons

Item	Evaluation Criteria	Evidence Reviewed
	cators declared by the pathway (water scarcity, nutritional quality, etc.) correctly implemented for documentation purposes	
ISO 14040/14044 compliance	Methodology follows required phases	Methodology documentation, sample reports

Methods:

- Document review of methodology documentation
- Interviews with methodology team
- Walkthrough of calculation engine with test cases
- Comparison of the validated provider's methodology against ISO 14040/14044 requirements

3.2 Database Validity

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Data provenance	Sources documented and traceable	Database source documentation
Data quality assessment	Quality indicators applied per data quality framework	Quality scoring records
Database update process	Systematic process for updates, documented changes	Update log, change history
Emission factor currency	Emission factors current and sourced from reputable databases	Sample emission factors vs. reference LCI databases
Gap-filling	GFMs produce conservative, documented, scientifically justified estimates	gap-filling module documentation, gap-filled vs. primary data comparisons

Methods:

- Spot-check of 20–30 database entries against source databases (standard LCI databases, e.g. Agribalyse)
- Review of database update procedures and change log
- Evaluation of gap-filling methodology and outputs
- Interview with database management team

3.3 Quality Assurance Processes

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
QA outcome requirements	Accuracy, reproducibility, completeness, traceability, and outlier detection outcomes are met (see Section 7.4)	QA metrics, regression test results, sample assessment files

Item	Evaluation Criteria	Evidence Reviewed
Enhanced Assurance QA (expert review)	QA methods achieve enhanced accuracy thresholds	Assessment files, review records, analyst training records
Enhanced Assurance QA (validated pipeline)	Automated pipeline achieves ±10% accuracy; flagged items receive expert review	Pipeline validation report, accuracy metrics, flagging logs, escalation records
Enterprise data integration	Integration extracts data accurately and propagates changes	Reconciliation records, extraction accuracy spot-checks, mapping currency
Standard Assurance QA	Automated QA methods achieve standard accuracy thresholds	Automated validation logs, matching accuracy statistics, flagging rates
Automated validation	Completeness checks, outlier detection functioning	System demonstrations, test results
Operator feedback	Dashboard feedback and correction processes effective	Operator dashboard, correction records

Methods:

- Review of QA metrics against outcome requirements
- Review of 10–15 complete Enhanced Assurance assessment files
- Review of automated QA logs and statistics for Standard Assurance
- Interviews with QA staff
- Process walkthrough of a live or recent assessment at each assurance level

3.4 Personnel Competence

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Analyst qualifications	Appropriate education and training for LCA assessment	CVs, training records
Training programme	Ongoing training on methodology, tools, quality	Training logs, curricula
Supervision	Adequate oversight of junior analysts	Supervision records, review chains
Staffing adequacy	Sufficient staff to maintain QA standards at assessment volume	Staffing plans, workload data

3.5 Organisational Processes

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Complaint handling	Procedures in place per Section 10	Complaint register, resolution records
Non-conformity management	Procedures in place per Section 9	Non-conformity records
Data confidentiality	Adequate security for participating company data	IT security documentation, access controls
Traceability	Full audit trail for all assessments	Archive system, record retention
Change management	Validated change management process in place per Section 12	Change logs, regression test results, version control

4. Sample-Based Verification

The VVB verifies individual assessments to confirm the system produces accurate outputs at both assurance levels.

4.1 Sample Selection

Per Section 11.4:

Enhanced Assurance (questionnaire-based):
- 60% random sampling (stratified by product category)
- 40% risk-based sampling (new categories, high uncertainty, complaints, borderline)

Enhanced Assurance (enterprise data integration):
- 50% random sampling (stratified by product category and data completeness)
- 50% risk-based sampling (new integrations, low completeness, recent sourcing changes, borderline, Tier 3–4 matches)

Standard Assurance:
- 50% random sampling (stratified by cuisine type and category)
- 50% risk-based sampling (high gap-filling, low-tier matches, borderline, novel combinations)

4.2 Enhanced Assurance Verification Steps (Per Assessment)

Step 1: Input Data Verification

Check	What the VVB Does
Ingredient list	Cross-check against available documentation (invoices, specifications, certificates)
Ingredient quantities	Verify percentages sum correctly and are consistent
Origin data	Verify against supplier records or certificates of origin
Production method	Verify certifications are current and correctly attributed
Processing data	Verify against utility data or production manager statements
Packaging data	Verify material weights and recycled content claims

Step 2: Database Match Verification

Check	What the VVB Does
Ingredient linking	Verify each ingredient is matched to an appropriate database entry
Match tier	Confirm tier classification is appropriate
Origin specificity	Verify country/region-specific data correctly applied
Certification recognition	Verify certified benefits correctly applied

Step 3: Calculation Verification

Check	What the VVB Does
DFU calculation	Recalculate DFU from nutritional data
CO_2eq calculation	Independently recalculate total CO_2eq per DFU
Allocation	Verify allocation method and calculation
Impact aggregation	Verify all life cycle stages correctly summed
Result comparison	Compare VVB calculation against the validated provider's result (acceptable variance: ±5%)

Step 4: Rating Verification

Check	What the VVB Does
Threshold application	Verify correct threshold table applied
Rating assignment	Confirm rating (A–E) matches the calculated impact value
Borderline check	If near threshold, verify enhanced QA was applied

Step 5: Documentation Review

Check	What the VVB Does
Assumption log	Verify all assumptions documented with justification
QA records	Confirm QA outcome requirements documented and met
Client verification	Confirm client data lock documented
Report completeness	Verify final report package is complete

4.3 Standard Assurance Verification Steps (Per Assessment)

Step 1: Ingredient Matching Quality

Check	What the VVB Does
Match accuracy	Verify each ingredient matched to appropriate ingredient-database entry
Tier classification	Confirm tier is accurate (independent assessment of match quality)
Synonym resolution	Verify synonym resolution produced correct results
Tier 3–4 matches	Assess whether a better match was available

Step 2: Gap-Filling Accuracy

Check	What the VVB Does
Origin assignments	Verify plausible (check against known supplier data or FAO trade statistics)
Processing estimates	Check match actual convenience level of the dish
Transport estimates	Verify reasonable for assigned origins
Conservative bias	Assess whether gap-filled values are appropriately conservative

Step 3: Calculation Verification

Check	What the VVB Does
CO_2eq calculation	Independently recalculate total CO_2eq per DFU
gap-filling module execution	Verify gap-filling modules executed in correct dependency order
GWP factors	Confirm correct factors used
DFU calculation	Verify from nutritional values

Step 4: Rating and QA Verification

Check	What the VVB Does
Rating assignment	Confirm correct rating assigned
Near-threshold flagging	Check that near-threshold assessments were flagged
QA flag triggers	Verify flags correctly triggered (or correctly not triggered)
Audit trail	Confirm full gap-filling execution log available

4.4 Discrepancy Reporting

Discrepancy Type	Classification	Required Action
Variance <5%, no rating change	Observation	Documented, no corrective action required
Variance 5–15%, no rating change	Minor non-conformity	Corrective action plan within 30 days
Any rating change	Major non-conformity	Rating corrected, root cause analysis, systematic review
Pattern of errors (>5% of sample)	Critical non-conformity	Expanded sample, potential suspension

5. Document Audit

The VVB reviews the completeness, accuracy, and currency of scheme documentation:

Document	Check
Scheme documents (01–12)	Current, internally consistent, aligned with actual practice
Governance documents	Policies implemented, consultation records maintained
Assessment reports	Standardised format, complete, traceable
CHANGELOG	All changes documented with dates and rationale

Document	Check
Calculation-engine change log	Complete, classifications justified, regression results recorded
Public information	Website and public communications consistent with scheme

6. Audit Reporting

6.1 Audit Report Contents

Each audit report shall include:

- Audit scope, dates, and team composition
- Summary of findings (conformities and non-conformities)
- Classification of each non-conformity (minor, major, critical)
- Evidence supporting each finding
- Sample verification results (pass rate, discrepancies, patterns)
- Change management review findings
- Status of previous non-conformities
- Overall conformity assessment
- Corrective action requirements and timelines
- Recommendation to the VVB decision-maker (certify, maintain, suspend, withdraw)

6.2 Timeline

- Audit report issued within 15 business days of audit completion
- Provider response to findings within 30 calendar days
- VVB decision within 15 business days of Provider response (or response deadline)

7. Automated Pipeline Evaluation

7.1 Purpose

This section defines evaluation criteria for the automated assessment pipeline. These criteria apply to Standard Assurance assessments, to Enhanced Assurance assessments delivered via validated automated pipeline, and to assessments delivered via enterprise data integration. Section 7.8 defines additional criteria specific to enterprise data integration.

7.2 Pipeline Validation

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
gap-filling module execution order	GFMs execute in correct dependency order	Pipeline configuration, execution logs
gap-filling module accuracy	Each gap-filling module produces results within acceptable accuracy ranges	gap-filling module validation reports, accuracy benchmarks
Pipeline consistency	Same input produces same output (deterministic)	Repeated calculation tests with identical inputs

Item	Evaluation Criteria	Evidence Reviewed
Edge case handling	Pipeline handles unusual inputs gracefully	Test case results, error handling documentation
Performance	Pipeline completes within acceptable time limits	Performance metrics, SLA compliance data

Methods:

- Walkthrough of the automated pipeline with test recipes
- Review of gap-filling module validation documentation and accuracy benchmarks
- Submission of VVB-prepared test recipes and comparison of results against independent calculations
- Review of edge case test suites and results

7.3 Ingredient Matching Quality

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Match accuracy	Automated matches are correct for the ingredient described	Sample of 50+ ingredient matches reviewed manually
Tier distribution	Appropriate distribution of match tiers (majority Tier 1–2)	Aggregate match tier statistics
Synonym coverage	Common ingredient synonyms correctly resolved	Synonym database, test cases
Ambiguity handling	Ambiguous ingredient names resolved conservatively	Examples of ambiguous matches, resolution logic
New ingredient handling	Previously unseen ingredients matched appropriately or flagged	New ingredient log, match quality for novel items

Methods:

- Manual review of 50+ automated ingredient matches across diverse cuisines
- Test submission of intentionally ambiguous or unusual ingredient names
- Review of synonym database coverage and maintenance process
- Analysis of Tier 3–4 match rates and whether better matches were available

7.4 Origin Assignment Validation

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
FAO trade model accuracy	Assigned origins reflect actual trade patterns	FAO trade data comparison, model documentation
Seasonal adjustment	Origin assignments reflect seasonal sourcing patterns	Seasonal model documentation, sample seasonal assignments
Operator override handling	Operator-provided origins correctly prioritised over defaults	Override logic documentation, test cases

Item	Evaluation Criteria	Evidence Reviewed
Conservative bias	When uncertain, origin assignment errs toward higher-impact origins	Analysis of default assignments vs. actual distributions

7.5 Transport Estimation Validation

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Distance calculation	Origin-to-destination distances are reasonable	Sample distance calculations vs. reference distances
Mode assignment	Transport modes plausible for origin-destination pairs	Mode assignment logic, sample assignments
Emission factors	Transport-emission factors are current, sourced from a recognised database, and correctly applied	Emission factor documentation
Refrigeration	Refrigerated transport correctly assigned for perishable ingredients	Refrigeration assignment logic, test cases

7.6 Automated QA Effectiveness

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Flag trigger rate	QA flags triggered at appropriate rates	Flag statistics, false positive/negative analysis
Escalation compliance	Flagged assessments handled according to escalation rules	Escalation log, resolution records
Outlier detection	Implausible results correctly identified	Known outlier test cases, detection rates
Continuous monitoring	Systematic drift or degradation in accuracy is detected	Monitoring dashboard, trend analysis

7.7 Cross-Validation: Enhanced vs. Standard Assurance

To verify that the automated pipeline produces results consistent with expert-reviewed assessments, the VVB shall:

1. Select 10–20 products that have been assessed at both assurance levels
2. Compare the Standard Assurance automated result against the Enhanced Assurance expert-reviewed result for the same product
3. Document any discrepancies and their causes
4. Acceptable variance: ±15% on CO_2eq/DFU (reflecting the inherently lower data specificity at Standard Assurance)
5. Rating-level agreement: at least 80% of cross-validated products should receive the same A–E rating at both assurance levels

Systematic divergence between assurance levels for comparable products indicates a calibration issue requiring corrective action.

7.8 Enterprise Data Integration Validation

7.8.1 Purpose

This section defines how the VVB validates enterprise data integrations that provide data for Enhanced Assurance assessments. Validation is required before assessments delivered through an enterprise integration qualify for Enhanced Assurance claims. The pathway documents its enterprise-integration implementation in PA-05; framework-level requirements are summarised in Section 6.2.

7.8.2 Initial Validation

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Data extraction accuracy	Automated extraction correctly represents enterprise source data	Side-by-side comparison of 20+ products: enterprise source vs. extracted data
Field mapping	Enterprise data fields correctly mapped to the validated provider's data model	Mapping specification, sample mappings, edge case handling
Data completeness	Integration achieves sufficient completeness for the product portfolio	Completeness statistics across product categories
Update propagation	Changes in enterprise system propagate within 30 days	Test: modify product in enterprise system, verify propagation timing
Error handling	Integration handles missing, malformed, or ambiguous data gracefully	Error logs, fallback behaviour documentation, test cases
Authentication and security	Data connection uses appropriate security controls	API documentation, encryption, access controls

Methods:

- Side-by-side comparison of extracted data against enterprise source for 20+ products across diverse categories
- Test submission of modified product data to verify propagation timing and accuracy
- Review of mapping specification and transformation logic
- Review of error handling and fallback procedures
- Interview with integration development team

7.8.3 Ongoing Validation (Annual Surveillance)

At each annual surveillance audit, the VVB shall review:

Item	Evaluation Criteria	Evidence Reviewed
Reconciliation records	Quarterly reconciliation conducted; discrepancies resolved	Reconciliation logs, resolution records

Item	Evaluation Criteria	Evidence Reviewed
Mapping currency	Mappings updated when enterprise system schema changes	Mapping change log, enterprise system release notes
Extraction accuracy	No systematic extraction errors detected	Error logs, spot-check of 10+ recently updated products
Completeness trends	Data completeness maintained or improved	Completeness statistics over audit period
Integration uptime	No prolonged outages affecting assessment currency	Uptime logs, incident records

7.8.4 Cross-Validation: Enterprise Integration vs. Questionnaire

Where products exist that have been assessed via both enterprise integration and questionnaire-based Enhanced Assurance (or can be assessed at both during the audit), the VVB shall:

1. Select 10–20 such products
2. Compare the enterprise integration result against the questionnaire-based result
3. Acceptable variance: ±10% on CO_2eq/DFU (both pathways use complete data; variance should be low)
4. Rating-level agreement: at least 90% of cross-validated products should receive the same A–E rating
5. Where discrepancies exceed tolerance, investigate whether the cause is data extraction error (integration issue) or data difference (legitimate divergence in source data)

Systematic divergence between intake pathways for the same products indicates an integration accuracy issue requiring corrective action.

8. Change Management Evaluation

8.1 Purpose

This section defines how the VVB evaluates the validated provider's compliance with the validated change management process specified in Section 12.

8.2 Change Classification Review

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Classification accuracy	Changes correctly classified as non-substantive, minor, or major	Change log entries, regression test results
Completeness	All changes recorded in the change log	Version control history vs. change log entries
Timeliness	Notifications and approvals provided within required timelines	Communication records, timestamps

Methods:

- Spot-check 10–20 changes from the change log against the classification criteria
- Compare version control commit history against change log entries to verify completeness
- Review notification and approval records for minor and major changes

8.3 Regression Test Suite Review

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Suite composition	Coverage across rating categories, food categories, completeness levels, supply-chain complexity, ingredient counts, gap-filling levels, and matching tiers (per Section 12.5.1); suite size and structure as declared in pathway annex PA-07.1	Test suite inventory; pathway annex
Suite maintenance	Suite reviewed annually, no items removed to game materiality	Suite change history
Test execution	Tests run for every release	Test execution logs with timestamps
Result accuracy	Materiality metrics correctly calculated	Raw test results, calculation verification

Methods:

- Review test suite composition and coverage against requirements
- Verify test execution logs for each release since last audit
- Independently verify materiality calculation for 2–3 selected releases
- Confirm no test suite items were removed without documented justification

8.4 Emergency Change Review

What the VVB evaluates:

Item	Evaluation Criteria	Evidence Reviewed
Justification	Emergency classification was warranted	Incident documentation
Notification timeliness	VVB notified within 48 hours	Communication records
Retroactive compliance	Full regression tests completed within 5 business days	Test results, timestamps

8.5 Cumulative Impact Assessment

At each annual review, the VVB shall assess whether the cumulative effect of minor changes since the last audit has collectively exceeded the materiality threshold. If so, the VVB may:

- Require expanded regression testing
- Reclassify the cumulative change as major (requiring formal approval)
- Initiate a trigger audit

PART IV

Technical Annexes

EmpCo-AX-C and EmpCo-AX-D

Note on Provider-Specific Annexes

The methodology-neutral framework (this document) does not prescribe a single rating system or a single benchmark dataset. Provider pathways may operate their own rating systems and benchmarks; see Section 4.5.

Reference content describing one specific provider's rating thresholds, benchmark methodology, and calculation-engine architecture is preserved on the *provider/eaternity* branch of this repository as a worked example of one validated provider pathway.

Annex C: Data Quality

Document: EmpCo-AX-C **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

C.1 Purpose

This annex defines the data quality framework used in a validated provider's environmental assessment system, including quality tiers, scoring criteria, and the relationship between data quality and assessment confidence. The framework applies to both assurance levels (Enhanced and Standard), with level-specific considerations noted where applicable.

C.2 Data Quality Tiers

C.2.1 Ingredient Data Matching

Tier	Description	Example	Quality
Tier 1	Exact match: product, origin, production method	"Basil, fresh, heated greenhouse, Netherlands"	Highest
Tier 2	Representative match: product and origin, generic method	"Basil, fresh, field-grown, Italy" (method not specified)	High
Tier 3	Category proxy: same product, generic or different origin	"Basil, fresh, generic European"	Medium
Tier 4	Modelled estimate: gap-filling module-based, using similar products	Estimate based on herb category average	Lower

C.2.2 Target Mix

Enhanced Assurance:

Metric	Target	Acceptable
Tier 1 matches	$> 80\%$	$> 60\%$
Tier 1 + Tier 2	$> 90\%$	$> 75\%$
Tier 4 (modelled)	$< 5\%$	$< 15\%$

Standard Assurance:

Metric	Target	Acceptable
Tier 1 + Tier 2 matches	$> 60\%$	$> 40\%$
Tier 1 + Tier 2 + Tier 3	$> 85\%$	$> 70\%$
Tier 4 (low-confidence)	$< 15\%$	$< 30\%$

Standard Assurance has wider acceptable ranges because automated ingredient matching operates without expert verification. The lower match precision is compensated by conservative gap-filling defaults and the wide threshold intervals of the A–E rating system (see Section C.7).

C.3 Data Quality Indicators

Each data point is assessed against five quality dimensions (aligned with ISO 14044 and PEF):

C.3.1 Dimensions

Dimension	Description	Score 1 (Best)	Score 5 (Worst)
Reliability	How the data was obtained	Verified measurement	Unqualified estimate
Completeness	Fraction of relevant flows covered	All relevant flows	$<$ 50% of flows
Temporal relevance	Age of data relative to assessment	$<$ 3 years old	$>$ 15 years old
Geographic relevance	Match to actual production location	Same country/region	Different continent
Technological relevance	Match to actual production method	Same technology	Different technology

C.3.2 Scoring Scale

Score	Quality Level
1	Excellent — primary, verified data
2	Good — representative data with minor gaps
3	Fair — proxy data from similar context
4	Poor — proxy data from different context
5	Very poor — rough estimate, not recommended for public claims

C.3.3 Composite Score

The overall data quality score for an assessment is the weighted average of individual data quality scores, where weights reflect the contribution of each data point to the total environmental impact.

Composite Score	Quality Level	Suitability
1.0–2.0	Excellent	Full public claims, comparative assertions
2.1–3.0	Good	Public claims, general comparisons
3.1–4.0	Fair	Internal use, improvement identification
4.1–5.0	Poor	Screening only, not for public claims

C.4 Data Completeness and Assessment Accuracy

Data Completeness	Assessment Accuracy	Confidence Level	Recommendation
90–100%	±5%	High	Suitable for all public claims
70–90%	±10%	Good	Suitable for public rating display

Data Completeness	Assessment Accuracy	Confidence Level	Recommendation
50–70%	±20%	Moderate	Rating reliable; numerical values approximate
Below 50%	±30%+	Low	Not recommended for public-facing claims

Standard Assurance note: Standard Assurance recipe assessments typically achieve 40–70% data completeness with minimum input data (ingredient names and quantities only), rising to 70–90% with enhanced data (origins, certifications). Even at moderate completeness, the A–E rating assignment remains reliable due to the wide threshold intervals (see Section C.7).

C.5 Gap-Filling Quality

C.5.1 gap-filling module Documentation

For each gap-filled data point, the following is documented:

- Parameter that was gap-filled
- Method used (proxy, model, conservative default)
- Source and justification
- Uncertainty range
- Impact on the overall score (sensitivity)

C.5.2 Conservative Default Principle

When primary data is unavailable, the gap-filling approach follows a conservative default principle:

- Estimates err towards **higher** environmental impact
- This ensures that gap-filled scores do not unfairly favour products with missing data
- Conservative defaults are documented and identifiable in the assessment

C.5.3 Priority for Improvement

Gap-filled data points are flagged as priority items for data quality improvement in subsequent assessments. Participating companies are advised on which data points would most improve their score accuracy.

C.6 Quality Assurance Metrics

C.6.1 Internal KPIs

Enhanced Assurance:

Metric	Target
Average data quality score	> 4.0 / 5.0
Tier 1 ingredient matches	$> 80\%$
Client corrections per report	< 3
Peer review approval rate	$> 95\%$

Metric	Target
External verification pass rate	100%

Standard Assurance:

Metric	Target
Average ingredient match confidence	> 75%
Tier 1 + Tier 2 matches (by impact weight)	> 60%
Automated QA flag rate	< 10% of recipes
False positive flag rate	< 30% of flags
Rating agreement with Enhanced Assurance cross-validation	> 80%
External verification pass rate	100%

C.6.2 Continuous Improvement

Data quality typically improves over successive assessments:

- **Initial assessment:** Baseline data quality, more assumptions
- **First annual update:** Improved supplier data, fewer assumptions
- **Subsequent updates:** Primary data collection, high accuracy

C.7 Uncertainty and Rating Stability

The rating system is designed so that typical data uncertainties do not change a product's rating category:

- The A/B threshold (1,947 vs. 3,894 g CO_2eq/DFU) represents a 2x factor
- The B/C threshold (3,894 vs. 7,787 g CO_2eq/DFU) represents a 2x factor
- Typical data uncertainty of ±20% is insufficient to cross a 2x threshold boundary

Products and recipes near threshold boundaries receive enhanced QA review and are flagged for priority attention during VVB sample-based verification. For Standard Assurance, near-threshold recipes are automatically flagged by the automated QA system (see Section 7.4.5).

Annex D: Climate-Change Characterisation Factors (EF 3.1 and IPCC AR6)

Document: EmpCo-AX-D **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

D.1 Purpose

This annex specifies the characterisation factors used to compute the climate-impact rating under EmpCo. The scheme's reference LCIA method is **EF 3.1 climate change** (built on IPCC AR6 GWP100 with fossil / biogenic / LULUC sub-indicator structure); the method itself is pathway-declared under the AR6-generation guardrail of Section 1.4.3. IPCC AR5 GWP100 is not accepted as a *reporting* method; AR5-era and literature-sourced *input* data are admissible when re-characterised to EF 3.1 and flagged (see Section D.6).

D.2 Reference Standard — EF 3.1

EF 3.1 is the European Commission's official LCIA methodology, maintained by the Joint Research Centre (JRC) as the technical basis of the Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) frameworks.

- **Reference:** Andreasi Bassi, S., Biganzoli, F., Ferrara, N. et al. (2023). *Updated characterisation and normalisation factors for the Environmental Footprint 3.1 method.* JRC Technical Report JRC130796. Publications Office of the European Union. DOI: 10.2760/798894.
- **EF reference package:** eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml
- **Underlying GWP values:** IPCC, 2021: *Climate Change 2021: The Physical Science Basis*, AR6 Working Group I report. Chapter 7, Table 7.15 (GWP100 values).

EF 3.1 is the LCIA method because:

- It is the EU's mandatory LCIA method for PEF studies and PEFCRs
- It is aligned with the forthcoming Green Claims Directive
- It is built on IPCC AR6 (2021), the current scientific consensus for radiative forcing
- It is natively supported in Ecoinvent, Brightway, and SimaPro
- It provides sub-category disaggregation (fossil / biogenic / LULUC) which is material for food systems

D.3 Climate-Change Sub-Indicators

EF 3.1 reports climate change as **four indicators**, all in kg CO_2-eq using GWP100:

Sub-indicator	Scope	When it matters for food
Fossil	CO_2, CH_4, N_2O from fossil sources; HFCs; PFCs; SF_6 NF_3	Energy, transport, fertiliser production, refrigerants
Biogenic	CH_4 biogenic; biogenic CO_2 (CF ≈ 0)	Enteric fermentation in ruminants, rice paddies, manure
Land use and land-use change (LULUC)	CO_2, CH_4, N_2O from direct LUC and peat oxidation	Deforestation-driven commodities (soy, palm,

Sub-indicator	Scope	When it matters for food
		beef from expanded pasture)
Total	Sum of the three	Headline climate-impact rating

Reporting rule (per PEF methodology): Each sub-indicator shall be reported separately when it contributes more than 5% of the total climate-change impact. The A–E rating is assigned on the **total** indicator (Section 4).

D.4 GWP100 Factors (EF 3.1 / IPCC AR6)

D.4.1 Principal Greenhouse Gases

Gas	Chemical Formula	GWP100	Primary Sources in Food Systems
Carbon dioxide (fossil)	CO_2	**1**	Energy use, transport, fertiliser manufacture, industrial processes
Carbon dioxide (biogenic)	CO_2	**0**	Respiration, biomass combustion at end-of-life
Methane (fossil)	CH_4 fossil	**29.8**	Natural-gas leakage in the energy and fertiliser supply chain
Methane (biogenic)	CH_4 biogenic	**27.0**	Enteric fermentation (ruminants), rice paddies, manure management, landfill
Nitrous oxide	N_2O	**273**	Fertiliser application, soil management, manure, industrial processes

D.4.2 Fluorinated Gases (Refrigerants)

Gas	GWP100 (EF 3.1 / AR6)	Application in Food Systems
HFC-134a	1,530	Commercial and domestic refrigeration
HFC-404A	~3,940	Commercial refrigeration, cold chain transport
HFC-410A	~2,260	Air conditioning (processing facilities)
R-744 (CO_2)	1	Natural refrigerant (modern systems)
R-717 (NH_3)	0	Industrial refrigeration
R-290 (propane)	0.02	Commercial refrigeration (low-GWP alternative)

Values are the EF 3.1 characterisation factors corresponding to IPCC AR6 GWP100. Where specific refrigerant data is unavailable, a default leakage rate and representative GWP factor are applied based on the type of refrigeration system. See the EF 3.1 CF spreadsheet (JRC) for the complete list.

D.5 CO_2 Equivalent Calculation

The total CO_2 equivalent for a product is calculated as:

```
CO2eq_total = CO2eq_fossil + CO2eq_biogenic + CO2eq_LULUC
```

where each component is:

```
CO2eq_x = sum over i of (mass_i x GWP100_i)
```

For the principal food-system gases:

```
CO2eq_fossil   = CO2_fossil + CH4_fossil x 29.8 + N2O x 273 + sum(HFC_i x GWP_i) + ...
CO2eq_biogenic = CH4_biogenic x 27.0 + CO2_biogenic x 0
CO2eq_LULUC    = CO2_LUC + CH4_LUC x 27.0 + N2O_LUC x 273
```

All greenhouse-gas masses are in the same unit (typically kg or g).

D.6 Reporting Floor vs. Input-Data Provenance; Transition Notes

EmpCo distinguishes the **reporting method** (the method under which a certified result is characterised and published) from the **provenance of the input data** (the inventory and emission factors a pathway feeds into that method).

Reporting method — fixed at EF 3.1. Prior versions of this scheme (≤ 0.3.2-draft) recognised IPCC AR5 GWP100 ($CH_4 = 28$, $N_2O = 265$) as a reporting method. v0.3.3-draft introduced EF 3.1 alongside AR5; v0.3.7-draft **removes AR5 as a reporting method entirely** and consolidates to **EF 3.1 only** (built on IPCC AR6 GWP100 with the EF 3.1 fossil / biogenic / LULUC sub-indicator structure). Every validated result is reported under EF 3.1. Pathways previously *characterised* under AR5 shall transition their reporting to EF 3.1 before pathway validation.

D.6.0 Admissibility of AR5-era and Literature-sourced Input Data

A pathway's underlying inventory and emission-factor data frequently derive from peer-reviewed literature whose characterisation vintage the provider does not control; some of that source data was characterised under IPCC AR5. Such input data are **admissible** under EmpCo, subject to two conditions:

1. **Re-characterisation.** Before a result is reported, the GWP contribution of AR5-era input data is restated to EF 3.1 / AR6 GWP100. Where a source study reports activity data or gas-resolved emissions, this is a direct factor substitution; where only an AR5-characterised CO_2eq aggregate is available, the pathway applies a documented restatement (see Section D.6.1 for the typical 2–5% magnitude) and records the method used.
2. **Provenance flag.** The evidence file flags any input data whose original characterisation was AR5-era or whose vintage is otherwise non-AR6-native, so the provenance is auditable and reflected in the data-quality indicators (Annex C).

This keeps the **reporting floor firm** — nothing is *reported* under AR5 — while not excluding otherwise-valid source studies for which an AR6-native restatement is unavailable. Excluding such studies outright would degrade gap-filling and coverage without improving the reported result, since the re-characterised contribution is identical to what an AR6-native source would yield within the stated uncertainty. The reporting/input distinction is the same one drawn in Section 2.6.1.

D.6.1 Impact on Absolute Scores

For a typical food product the move from AR5 to AR6-based methods shifts the absolute CO_2eq by approximately **2–5%**. This is within the normal uncertainty envelope of the assessment (typically ±10% Enhanced, ±20% Standard) and in isolation does not cross rating thresholds in pathways that operate a rating system with sufficient threshold-band width (Section 4.7).

D.6.2 Impact on Pathway-Specific Benchmarks

Where a pathway operates a rating system with a benchmark dataset (e.g. the Eaternity EOS pathway publishes 3,728 g CO_2eq / DFU from a 2026-03 EDB snapshot), the benchmark may have been derived under AR5. Pathways operating such benchmarks shall recalculate them under EF 3.1 at the **next scheduled benchmark refresh** and document the result in the pathway annex. Because AR5→AR6 is approximately uniform across the food-system sample, ratings are effectively unaffected in the short term and the recalculation is classified as a **minor change** under EmpCo-12.

D.6.3 CH4 Fossil vs. Biogenic Split

AR5 used a single CH_4 value (28). EF 3.1 / AR6 splits CH_4 into **fossil (29.8)** and **biogenic (27.0)**. For food products this is materially informative:

- Ruminant enteric fermentation (cow burps) is **biogenic** — rated slightly *less severe* than under AR5
- Natural-gas supply-chain leakage (fertiliser, energy) is **fossil** — rated slightly *more severe* than under AR5

A validated pathway's calculation engine applies the split automatically based on the biosphere flow type in the underlying LCI database.

D.7 Emission Sources in Food Supply Chains

D.7.1 Methane (CH_4) Sources

Source	Typical Contribution	Sub-indicator	Notes
Enteric fermentation	30–50% of livestock GHG	biogenic	Dominant source for ruminants (cattle, sheep)
Manure management	5–10% of livestock GHG	biogenic	Depends on storage method (lagoon, dry, composting)
Rice cultivation	Major for rice products	biogenic	Anaerobic paddy conditions
Natural-gas leakage	1–3% of fertiliser/energy GHG	fossil	Upstream supply-chain emissions
Organic waste decomposition	End-of-life phase	biogenic	Food waste in landfills

D.7.2 Nitrous Oxide (N_2O) Sources

Source	Typical Contribution	Notes
Synthetic fertiliser application	40–60% of cropland N_2O	Both direct and indirect emissions
Manure application to soil	10–20% of cropland N_2O	Organic nitrogen conversion
Crop residue decomposition	5–10% of cropland N_2O	Post-harvest soil processes
Soil management	Variable	Depends on tillage, cover crops, moisture

D.7.3 CO_2 Sources

Source	Typical Contribution	Sub-indicator	Notes
Land-use change	Can dominate footprint	LULUC	Deforestation for agriculture (soy, palm oil, beef)
Energy use (farm)	5–15%	fossil	Machinery, irrigation, heating
Processing energy	5–20%	fossil	Varies by processing intensity
Transport	5–15%	fossil	Mode-dependent (air >> ship)
Packaging	2–10%	fossil	Material production and disposal

D.8 Update Policy

Characterisation factors are reviewed:

- When the EF method is updated (e.g. EF 3.2 or EF 4.0)
- When a new IPCC Assessment Report is published (IPCC AR7 is expected ~2029)
- When UNFCCC reporting standards transition to new GWP factors
- When major LCA databases (Ecoinvent) update their default EF / IPCC characterisation

Any change to characterisation factors triggers a benchmark recalculation and is subject to the major change consultation procedure defined in EmpCo-GOV-02.

Annex G: Trader Pass-Through Clauses (Model Template)

Document: EmpCo-AX-G **Version:** 0.4.1-draft-vv **Date:** 2026-07-08

Status: Normative for trader binding via the provider's standard customer terms (the default form for all traders; the on-pack surface schedule and the Enhanced Assurance option ride on the same acceptance); informative as a minimum floor for individually negotiated licence agreements, which shall incorporate equivalent or stricter terms.

G.1 Purpose

This annex defines the minimum contractual provisions that a validated provider's customer terms (Allgemeine Geschäftsbedingungen / general terms of service / customer master agreement) shall incorporate in order for the provider's Standard Assurance traders to be considered bound by the EmpCo scheme via provider-mediated binding (per Section 1.2.2 and Section 8.2.1).

A validated provider operating Standard Assurance traders shall:

- Incorporate the clauses below (or substantively equivalent provisions in the local legal language of the provider's customer base) into its standard customer terms
- Document the implementation in PA-10 of its pathway annex (effective version, effective date, customer notification record)
- Maintain a complete internal **trader register** of customers bound under these terms, kept current at the cadence specified in PA-10 (typically nightly), with status confirmation on request per G.2.4

A provider may bind any trader in **either of two contractual forms**, at the provider's choice:

1. **Surface schedule within the provider's standard customer terms** — the same acceptance mechanism as the base clauses of this annex, extended by a schedule covering the on-pack claim surface: label/mark licence, packaging correction and withdrawal timelines (Section 8.5), supplier evidence-chain duties, and — where the trader orders it — the Enhanced Assurance data-completeness option (Section 6). The surface schedule applies by claim surface at any assurance level; under this form the marginal contracting cost per trader is unchanged.
2. **Individually negotiated per-trader licence agreement** — appropriate where the trader (typically a brand or retailer) requires bespoke commercial terms; it shall incorporate this annex's clauses and the same surface-schedule matters.

Both forms are equivalent under this scheme **provided** that: (a) acceptance of the applicable terms is attributable under the provider's documented acceptance mechanism (use-based acceptance suffices for the surface schedule; an Enhanced Assurance order is always individually recorded); (b) traders who order Enhanced Assurance are **individually listed** on the public verification portal (the order records the consent), and all other traders are register-recorded with status confirmation on request; and (c) every trader is subject to VVB sample-based verification. The contractual *form* does not alter the assurance *level*: Enhanced vs. Standard is defined by data completeness and QA rigour (Section 6.2) — not by the contracting mechanism, and not by the claim surface.

G.2 Model Clauses (substance, not verbatim text)

The clauses below describe the substance each provider's customer terms shall cover. The exact legal wording is at the provider's discretion, subject to applicable law and to VVB review at the initial validation audit.

G.2.1 Scope of binding

By accepting these terms, the customer (the trader) acknowledges that:

- The environmental ratings, scores, and labels produced by the provider are issued under the European Sustainable Food Coalition's EmpCo Certification Scheme, a third-party certification scheme designed to support compliance with EU Directive 2024/825 (Empowering Consumers Directive)
- The use of those ratings, scores, and labels in the customer's products, menus, marketing, or any other consumer-facing communication is subject to the EmpCo scheme rules
- The customer is the *trader* under the EmpCo scheme for the purposes of any consumer-facing claim it makes using the provider's output

G.2.2 Compliance with claim rules

The customer agrees to comply with EmpCo scheme rules concerning:

- Permitted and prohibited claim wording (Sections 8.3 and 8.4)
- Visual presentation requirements (non-contradiction with the underlying metric, Section 8.2.4)
- Validity periods and re-assessment triggers (Sections 8.5.1 and 7.6)
- Anti-cherry-picking rules (selective display of only favourable ratings is prohibited, Section 8.4)
- Withdrawal of expired or invalidated assessments (Section 8.5.2)

The customer further agrees not to make claims that exceed the assurance level of the underlying assessment (e.g. on-pack claims based on Standard Assurance assessments are not permitted, Section 8.2.2).

G.2.3a Duty to furnish information (Auskunftspflicht)

Beyond the sampling *consent* in Section G.2.3, the customer is under an affirmative **duty to furnish information** in connection with its use of EmpCo labels. The customer **shall**, on written request from the validated provider, from ESFC, from the validation/verification body (VVB), or from the Certification Committee, provide the input data, supporting documentation, and records reasonably necessary to substantiate any environmental claim the customer has made using the provider's output — including product or recipe composition, sourcing and origin information, quantities, and the assessment or claim files as issued.

- **Standard response deadline:** within **10 business days** of the request, unless a longer period is agreed in writing.
- **Expedited deadline for authority and consumer-protection inquiries:** where the request arises from an inquiry by a consumer-protection or market-surveillance authority, from a court, or from a substantiated third-party challenge to a claim, the customer shall respond **without undue delay and in any event within 5 business days**, or sooner where the authority's own deadline so requires. The customer shall additionally notify the provider promptly of any such inquiry it receives directly (see Section G.2.5).
- **Scope and proportionality:** requests shall be limited to what is reasonably necessary to substantiate the claim in question. Commercially sensitive information (e.g. full recipes, supplier identities) furnished under this duty is handled confidentially and is not published in the public verification record (Sections 1.5 and 6.5).
- **Data-minimising routing:** the provider first draws on the data, assessment files, and register entry the trader has already submitted or that the provider already holds — which the trader authorises the provider to disclose, in confidence, to the scheme's bodies for validation, verification, sampling, and complaint handling. The trader is asked directly only for what the provider does not hold: in particular the as-displayed form of a claim (packaging, menu, marketing material), supporting evidence not previously submitted, and notice of authority inquiries the trader receives directly.

- **Consequence of non-compliance:** persistent or unjustified failure to furnish requested information within the applicable deadline is a ground for discretionary suspension or termination under Section G.2.6 and, where it prevents substantiation of a live claim, may require withdrawal of the affected claim.

This duty gives the scheme a substantiation basis that EU Directive 2024/825 and applicable unfair-competition law expect a claim-maker to be able to meet on request (not legal advice).

G.2.3 Audit and verification consent

The customer consents to:

- Sample-based verification of its claims by the validation/verification body designated by the validated provider, including (where reasonable and proportionate) requests for input data, supporting documentation, or remote access to recipe and product records (Section 11.4)
- Site visits or remote audits where the VVB's sample selection or risk-based assessment indicates verification at the customer's premises is necessary, with reasonable notice (typically not less than 10 business days for non-urgent visits)
- Investigation by the validated provider or by ESFC when a complaint concerning the customer's use of EmpCo labels has been received (Section 10.3)

The provider is the customer's primary point of contact for sampling and complaint-related communications and forwards VVB requests to the customer with the cooperation expected under these terms.

G.2.4 Trader register and status disclosure

The customer acknowledges and agrees that:

- The provider maintains a complete **trader register** of customers bound under these terms (trader name, city where needed to disambiguate multi-site or chain operators, status active / suspended / terminated, joining and status-change dates), kept current from the provider's customer records at the cadence specified in PA-10 (typically nightly)
- The register is disclosed **in full, on request and in confidence**, to the VVB, the Certification Committee, ESFC, and competent authorities; it is the sampling frame for G.2.3 and the basis for scheme oversight
- The scheme's public portal publishes **aggregate register statistics** per provider (counts of active, suspended, and terminated traders, and the register cadence) — not the trader list
- **Status confirmation on request:** any person may ask, via the portal's verification contact, whether a named trader's EmpCo claims are backed by a validated pathway; the provider (or the scheme owner) confirms the trader's status without undue delay. Requests arising within a complaint procedure follow the timelines of Section 10.

Public listing of Standard Assurance traders is not required. A trader may **opt in** to an individual public entry on the portal (name, city, provider link, status); opt-in listing is consent-based and revocable. Traders who order Enhanced Assurance remain individually listed per G.1 and Section 1.5.2, their order recording the consent. On-pack and shelf claims circulate without transactional context; where they are made at Standard Assurance, verifiability is provided by the status-confirmation mechanism — any person may ask whether a named trader's claims are backed, and is answered without undue delay.

Because the register is internal, disclosure is limited to scheme bodies and competent authorities (contract performance / legal obligation), and any public entry is based on the trader's own order or consent, the data-protection surface is materially smaller than under a published roster; the provider documents its data handling in PA-10 (*not legal advice*).

G.2.5 Complaint cooperation

The customer agrees to cooperate with the validated provider and (where escalated) with ESFC and the VVB in the investigation and resolution of complaints concerning its use of EmpCo labels. Cooperation includes:

- Providing reasonable information about the products, recipes, or communications subject to the complaint within the timelines specified in the provider's complaint handling procedure
- Implementing corrective actions (e.g. claim-wording changes, label removal, communication retraction) as required by the resolution
- Notifying the provider of any consumer-protection authority enquiries received in connection with EmpCo claims

G.2.6 Termination and suspension authority

The validated provider's authority to suspend or terminate the customer's access to EmpCo-relevant services (rating issuance, label use, register status) has two strengths depending on the trigger:

The provider *shall* suspend (mandatory) where:

- The VVB issues a finding of non-conformity directly attributable to the customer's claim use, and the customer does not implement corrective actions within the timeline set by the VVB
- The customer makes claims outside the scope of an active assessment (expired, suspended, or never issued)

The provider *may* suspend or terminate (discretionary) where:

- The customer materially breaches the rules in Section 8 (Label Usage), Section 10 (Complaints), or Section 11 (Surveillance) of the scheme
- A complaint concerning the customer's use of EmpCo labels is not resolved within the timelines in Section 10.3.2 and the customer has not implemented agreed corrective actions
- The customer repeatedly fails to cooperate with sampling, complaints, or audit requests despite reasonable notice

Suspension or termination triggers the corresponding status update in the trader register and, where the trader has a public entry (Enhanced Assurance or opt-in), on the public verification portal.

The customer is entitled to appeal a suspension or termination decision via the appeals procedure in Section 10.4.

G.2.7 Continuing scheme compliance

The provider may from time to time update its customer terms to reflect updates to the EmpCo scheme (e.g. new claim-wording rules, updated assurance-level definitions, new register or listing requirements). Updates are notified to the customer with a reasonable acceptance period (typically not less than 60 calendar days for material changes), after which continued use of the service constitutes acceptance under applicable law.

A customer that does not wish to accept an updated version of the terms is entitled to terminate the service contract during the acceptance period without penalty. Upon such termination, the customer's listing on the public verification portal is updated to "terminated" and the customer ceases to be bound by the scheme; existing on-pack labels and other consumer-facing claims must be withdrawn per Section 8.5.2. This preserves the customer's right under good-faith principles of applicable law (in Switzerland: Art. 19 et seq. of the Code of Obligations) to refuse a unilateral material amendment.

G.2.8 Disclaimer of VVB direct relationship

These terms do not create a contractual relationship between the customer and the validation/verification body. The customer's compliance with the scheme is enforced through the provider's contractual relationship with the customer (these terms) and the provider's own certification agreement with the VVB. The customer does not have a separate certification agreement with the VVB unless the customer enters Enhanced Assurance and signs an individual licence agreement.

G.3 Implementation Requirements for the Certified Provider

The validated provider shall:

1. **Adopt the clauses** in G.2 (or substantively equivalent provisions in the local legal language of its customer base) in its standard customer terms before the start of EmpCo certification.
2. **Notify existing customers** of the new terms with a reasonable acceptance period (typically 60 calendar days for material updates), using the notification mechanism customary for the customer relationship (email, in-product banner, postal mail).
3. **Document the implementation** in PA-10 of its pathway annex, including: effective version of the terms, effective date, customer notification mechanism and date, current count of customers bound under the terms.
4. **Maintain the trader register and status-confirmation mechanism** per G.2.4: keep the register current at the documented cadence (typically nightly from the provider's customer records); publish aggregate register statistics on the EmpCo portal; answer status-confirmation requests without undue delay; and operate individual public entries for Enhanced Assurance traders and for traders who opt in.
5. **Notify the VVB** at the initial validation audit and at each annual surveillance of: customer-terms version, customer notification record, total trader count, suspended/terminated count, and a complaint summary specific to trader-level claim non-conformities.

G.4 Audit by the VVB

At the initial validation audit, the VVB verifies:

- That the provider's customer terms incorporate the substance of G.2.1–G.2.8 (or equivalent provisions in local law). The VVB confirms a clause-by-clause mapping (provider's clause numbers ↔ Annex G clause numbers) is documented in PA-10.1.
- That the provider has a documented customer notification record sufficient to demonstrate that existing customers have been bound, including: notification mechanism (email / banner / postal), notification date, acceptance window, and a per-customer acceptance log. The VVB spot-checks **5 randomly selected customer records** against the provider's CRM to confirm the binding chain.
- That the trader register is complete, current, and exportable at the documented cadence, and that the portal's aggregate statistics match it. The VVB picks **5 random register entries**, verifies each against the provider's internal customer record (name, city, status, joining date all match), and tests the status-confirmation mechanism with **2 sample requests**.
- That the provider's internal procedures for suspension and termination of trader access (per G.2.6) are documented and operational. The VVB requests a walkthrough of one historical suspension case (or, for first-cycle audits, a tabletop walkthrough of how the provider would handle a hypothetical case).

At each annual surveillance, the VVB:

- Reviews the customer-terms version log and any updates since the last surveillance, confirming that material updates triggered customer renotification per G.2.7.
- Reviews the trader complaint summary (per G.3 step 5) for patterns of non-compliance that would constitute a system-level concern. A pattern is identified where the same trader is the subject of more

than 2 substantiated complaints in a 12-month period, or where the same complaint type recurs across more than 5% of the trader population.
- Spot-checks **5 randomly selected register entries** against the provider's CRM (active traders correctly registered; terminated traders re-statused within the documented propagation lag), and confirms the portal aggregates and any public entries (Enhanced Assurance / opt-in) are consistent with the register.
- Reviews the provider's enforcement record (suspensions and terminations actually executed during the surveillance period) and verifies that mandatory suspensions per G.2.6 (VVB findings, claims without active assessment) were executed in **100% of triggered cases** within the documented timeline.
- Confirms that the average days-to-suspension after a triggering event is consistent with the timeline declared in PA-10.4.

G.5 Background and Precedent

The provider-mediated trader binding architecture in this annex follows established product-certification practice for schemes with downstream end-users. Comparable models include:

- **MSC Consumer-Facing Organisation Standard** — restaurants serving MSC-certified seafood are bound through Chain-of-Custody certification held by the organisation, with sample-based site audits rather than per-restaurant individual certification.
- **Fairtrade National Fairtrade Organisation licensee model** — brands signing Fairtrade licences with national Fairtrade organisations (FLOCERT being the VVB) act as the licence-issuing entity for downstream uses; retailers selling pre-labelled product do not need their own licence.
- **Rainforest Alliance trader licence** — certificate holders sign a licence that flows downstream to retailers and food-service operators of the certified product without requiring per-end-user certification.

In each case, the third party's contractual relationship is with the licence holder; downstream binding is mediated through the licence holder's contracts with traders. The same pattern applies under EmpCo, with the validated provider acting as the label-licence holder and the trader bound through the provider's customer terms.

Appendix F: Document History

This appendix records all changes to the scheme documents. Each entry links to the corresponding commit in the public repository at gitlab.com/eaternity/empco. The changelog follows Keep a Changelog format with Semantic Versioning.

The public transparency portal at empco.eaternity.org provides downloadable scheme documents, per-pathway changelogs with regression test summaries, and stakeholder resources.

Version	Date	Classification	Summary
0.5.9-draft-vv	2026-08-18	Minor	**Cumulative materiality against the validation baseline** (new Section 12.4.4): every release computes and publishes BOTH the release delta (vs. the preceding release) and the cumulative delta (vs. the baseline — the state covered by the most recent validation statement or VVB-approved major change). A release whose cumulative delta exceeds the Section 12.4.1 threshold is major and requires VVB approval before deployment even where its own step is minor; the baseline resets on approval. Closes the accumulation gap in release-over-release testing; release cadence remains at the provider's discretion. Mirrors the Section 12.4 addition proposed to the ESFC Rulebook the same day. **Editorial:** canonical portal URLs moved to the provider-owned domain empco.eaternity.org (custom domain, auto-TLS; previous empco-aeceeb.gitlab.io URLs remain permanently served); portal renamed to "Eaternity EOS Pathway Disclosures" (provider-disclosure identity — the scheme-level record lives on the ESFC portal). **No floor item (Section 1.4.1) and no computational constant changed.**
0.5.8-draft-vv	2026-08-18	Minor	**Claim surface decoupled from assurance level:** on-pack product claims and retail shelf labels no longer require Enhanced Assurance — any claim surface may be backed by either level, verified by sampling (Sections 1.2.2, 1.5.2, 3.2, 6.2, 8.2.2, 8.6, Annex G). The assurance level is a data-intake/QA property chosen by the participating company; Enhanced Assurance is activated only by express order or logged acceptance. Surface covenants (label licence in unaltered form, packaging correction timelines, pre-market change notification, supplier evidence) now key to the on-pack/shelf surface at every level. Trader binding re-keyed to the two contractual forms (schedule / individual agreement), both level-independent; public listing keys to the Enhanced order or opt-in consent, with status confirmation as the verifiability route for on-pack claims at Standard Assurance. Provider terms Anhang/Schedule E revised the same day. **No**

Version	Date	Classification	Summary
			floor item (Section 1.4.1) and no computational constant changed.
0.5.7-draft-vv	2026-08-06	Correction	**DFU stated as-operated with the announced revision named:** the operated unit keeps dry weight = mass − water (600 g) and the 6,000 kJ rest-energy divisor; the announced revision (WHO/FAO 2,000-kcal/60-kg reference frame, 5,076 kJ rest energy, macro-stripped dry matter with a 325 g divisor; open-source reference implementation `lci-dfu`) is documented in Sections 4.3/5.3 and the glossary. Pathways declare the unit as operated; adoption is change-managed with benchmark/threshold re-baselining in one step. The prior ~2,200 kcal orienting figure is removed (the revision resolves the frame inconsistency it papered over).
0.5.6-draft-vv	2026-08-05	Correction	**DFU definition corrected (editorial, no formula change):** the prose mis-described the divisor set as "1/3 of typical daily intake" with derived per-meal targets (16.7 g protein, 733 kcal, …) — in fact the divisors (50 g protein, 66 g fat, 6,000 kJ rest energy, 2,500 g water, 600 g dry weight) are **one-day** reference targets, so one DFU corresponds to one day's food intake (~2,200 kcal/day reference basis; the 6,000 kJ rest-energy denominator is the canonical constant). Corrected in Sections 4.3, 5.3 and the terms glossary; the open-source `lci-dfu` package (gitlab.com/eos-lci/lci-dfu) is referenced as the canonical implementation. Pathway annex synced (1.6.1-draft: same correction, contact addresses, EDB snapshot identified by its published changelog identity 2026.1 — Alpha (UVEK/BAFU Background), background-data section reduced to principal basis + completeness pointer, open-methods statement).
0.5.5-draft-vv	2026-08-04	Major	**EF 3.1 leg of the floor-to-guardrails proposal adopted:** the LCIA method moves from the uniformly mandatory floor (Section 1.4.1) to the pathway-declared dimensions (Section 1.4.3) under an **AR6-generation guardrail** (declared method must be built on the current IPCC characterisation generation; AR5 reporting not accepted; method + version published in the pathway registration and via the label's digital link). Aligns the scheme with the Rulebook, where the characterisation-factor choice is Layer-2-reviewed (Section 6.3 Q2); EF 3.1 remains the scheme's published reference factor set (Annex D) and the first pathway's declaration. DFU and A–E remain floor items (their guardrails legs stay under the GOV-02 consultation, D5). Pathway-facing

Version	Date	Classification	Summary
			vocabulary aligned to the Rulebook: Individual / Collective Assurance replace Enhanced / Standard on the pathway annex (1.6.0-draft) and the portal declared-choices page; the customer terms' schedule names follow at the next terms revision (mapping recorded in the concordance).
0.5.4-draft-vv	2026-07-29	Minor	Deep-review round on the RFP documents (multi-agent verification): bundle manifest re-pinned as **rev F** to the v0.4 package actually dispatched to bidders on 2026-07-29 (draft final 14 Aug, adoption 21 Aug); concordance re-anchored to Rulebook v0.4 (renumbering §8.5 hybrid / §8.6 sampling; delegation list aligned with the closed D4; new **D6** registering the §13.9 committee-mechanics divergence; residual flag: the announced §8.6 regression-suite distinction note is absent from the v0.4 draft). Legal position paper **v1.1**: new §0b (conditions precedent and 27-Sep transition posture) and Q13 (scheme-owner/provider proximity, disclosed with mitigations); Q5 monitoring line unified with §0 (annual sampled verification carries criterion (iv); validation is above-minimum architecture); Q3/Q5 reinforced from v0.4 (§13.9 committee veto; §6.3 questions 7–8); Q11 extended (vertical reviewer-fee routing; WG standardisation under Horizontal Guidelines ch. 7, compliance protocol recommended). Fee wording reconciled with Rulebook §13.5 (scheme-use fees are participation conditions, never conformity-gating) here and in GOV-04 §4.2. Customer notification corrected before dispatch (label/claim regimes stated precisely; safety promise conditioned on completed validation). Third-party confidences and negotiation-sensitive figures removed from the public files.
0.5.3-draft-vv	2026-07-29	Minor	Layer-2 scope synced to WG Rulebook v0.4 §6.3: the fixed question list extended from six to **eight** questions (new: reproducibility/independent re-run given pinned engine+database versions; uncertainty quantification with grade-boundary robustness). GOV-06 0.2.0 carries the full list and maps both new questions onto existing pathway evidence (determinism guarantee + regression suite + offline-oracle recompute; PA-06.5 uncertainty and rating stability). No floor item and no computational constant changed.
0.5.2-draft-vv	2026-07-25	Minor — legal foundation + convergence	**Legal foundation self-resolved:** the scheme owner's consolidated own legal analysis published as `docs/legal-position-paper.md` (not legal advice; no external counsel) — core question + 11 sub-questions, each with primary-source basis, confidence, counter-arguments, mitigations; new primary-source

Version	Date	Classification	Summary
			verifications include the Art. 2(p)/§ 2 Abs. 2 Nr. 1 **label-contained exclusion** for defined terms and the Horizontal-Guidelines paragraphs behind the competition-law narrowing. **GOV-01 Section 6.1 narrowed:** provider fee transparency is applicant-facing; no public-publication mandate; no scheme-side price collection/aggregation/benchmarking. **Convergence delta D3 folded:** hybrid provider–trader pathway (Section 1.2.6), trader-branded-label rule (Section 8.2.4), Annex G G.2.9 (two mandatory provider monitoring duties, no proactive market policing) and G.2.10 (methodology-use consent). **Concordance published** (docs/rfp-bundle/concordance.md): section-by-section Rulebook-EmpCo mapping, engagement precedence rule, five-item delta register. GOV-06 Section 3.4 fee rule refined (fixed-in-advance, outcome-independent; ESFC routing only for provider-proposed reviewers). **No floor item (Section 1.4.1) and no computational constant changed.** View changes
0.5.1-draft-vv	2026-07-25	Minor — governance	**Committee consolidation: one organ, two functions.** The Certification Committee absorbs the scheme's **scientific function** (EmpCo criterion (ii) expert consultation — methodology floor, guardrails, Layer-2 question list, calibrations; recommendations to the scheme owner, submissions to GOV-02) alongside its **licence function** (criterion (iii), bright-line rule unchanged). The separation is procedural, not organisational: licence decisions remain bound to the VVB record regardless of who sits; the scientific function is standard-setting, never pathway-specific conformity assessment (GOV-06 boundary). **Composition rebuilt for independence:** voting seats are the independent chair plus at least three scientific/civil-society members, all meeting the chair's independence bar (no commercial interest in licence outcomes); **provider and trader voting seats are replaced by standing hearing rights** — no commercially interested party ever votes on a licence, strengthening the Annex-I-2a self-certification defence and simplifying quorum and recusal (GOV-04 chapter 4; GOV-05 0.3.0 with new Section 9). Converged with the ESFC Working Group: the Rulebook's "Scientific Committee" and this organ are the same body — one recruitment, one chair. **No floor item (Section 1.4.1) and no computational constant changed.** View changes
0.5.0-draft-vv	2026-07-21	Minor — WG convergence	**WG-Rulebook convergence release**, each transferred item checked against the Commission Q&A

Version	Date	Classification	Summary
			on Directive (EU) 2024/825 (June 2026 version). New: **transition registration** (intent to certify; 2+2 months, never consumer-facing, expressly **no** claim rights — the Directive provides no transition period; the registration documents reasonable-and-proportionate efforts per the Q&A and the CPC old-stock Common Understanding); **self-managed pathway** (trader as its own provider, Section 1.2.4); **GOV-06 Scientific Review Process** (Layer 1/2 with the fixed six-question review scope — assessment sits with the VVB or independent reviewers, the scheme owner only administers, per the Q&A's required legal separation of scheme owner and monitoring third party; reviewer-pool fallback with fee routing via the scheme owner); **two-tier claim-medium rule** (Section 8.2.5: claim scope legible on the medium itself; supporting information via QR/digital link — Q&A-confirmed sufficient for that tier); **trader impact assessment** on provider-licence suspension (Section 9.5.4: 5-working-day per-trader decisions, old-stock measures before recall-level steps); **annual scheme performance report** (GOV-04); CABVVB and Individual/CollectiveEnhanced/Standard terminology bridges (Section 3). Fee wording aligned to the agreed ESFC position: published annual schedule outside the normative scheme, never gating, collective tier volume-tiered per provider. **No floor item (Section 1.4.1) and no computational constant changed.** View changes
0.4.1-draft-vv	2026-07-14	Minor — operating model	Standard Assurance public roster replaced by an internal **trader register** with status confirmation on request (portal shows aggregate statistics; opt-in individual entries; Enhanced Assurance stays individually listed). Duty to furnish information made data-minimising (Annex G G.2.3a routing). **Certification Committee operationalised**: charter embedded in this PDF (GOV-04 chapter 4), complete rules of procedure (GOV-05 0.2.0 — collegium voting, acting chair, written procedure, urgency ratification); chair-independence bar re-anchored on commercial interest in licence outcomes (member or not); working language English. "Climate-friendly" as a defined rating term (Section 8.3.1). Eaternity pathway annex published as an **applicant pathway** at its canonical path; bundle renamed `empco-scheme-with-pathway.pdf`. First provider's customer terms went live 2026-07-14 implementing Annex G. New CI guard keeps the framework provider-neutral. **No floor item**

Version	Date	Classification	Summary
			(Section 1.4.1) and no computational constant changed.
0.4.0-draft-vv	2026-07-08	Major (architecture)	**Rebuild on ISO/IEC 17029 (validation/verification architecture).** The conformity-assessment route is rebuilt from ISO/IEC 17065 product certification to an ISO/IEC 17029 + ISO 14065 validation/verification architecture with ISO 14067 product scope, engagements per ISO 14064-3, anchored on the Regulation (EC) No 765/2008 accreditation mechanism (the recital's second demonstration route). **No floor item (§1.4.1) and no computational constant changed** — sampling minima (100/200/200), ±5% recalculation variance, materiality thresholds, the ≥300-item regression suite, and the 3-year cycle all carry over verbatim. **Instruments:** the certification-body certificate becomes a **label licence** issued by the scheme's **Certification Committee** (new charter in GOV-04) on the basis of the VVB's **validation statement** (one-time system validation) and annual **verification statements**; the Committee decides on licence status only on VVB statements and findings (bright-line rule). **Documents:** `certification-body/` → `verification-body/` (VVB-01 requirements, VVB-02 engagement-team competencies per ISO 14066, VVB-03 engagement methodology per ISO 14064-3); §2.5 standards stack replaced. **Decision basis:** a 2026-07-08 register review of nine accreditation registers found zero ISO/IEC 17065 accreditations with an LCA/PCF scope anywhere, and at least 18 bodies (16 DAkkS + 2 ACCREDIA: RINA, TÜV Italia; Certiquality a probable third; nine registers checked) accredited to ISO/IEC 17029 + ISO 14065 with ISO 14067 product scope. Legal-foundation work (competition-law opinion, DG-JUST enquiry, DAkkS pre-inquiry) proceeds in parallel; the ISO/IEC 17065 route is documented as a later upgrade path (`docs/17065-upgrade-path.md`). Legal statements are the scheme owner's position and are not legal advice. View changes
0.3.8-draft	2026-06-14	Editorial	**Working-group feedback round (topic 312): clarifications and standards positioning.** No floor item (§1.4.1) and no computational constant changed. **AR5 / input-data layer (§2.6.1, Annex D.6):** clarified the distinction between the reporting method (fixed at EF 3.1 — unchanged) and the provenance of input data; AR5-era and literature-sourced input data are admissible when re-characterised to EF 3.1 and flagged in the evidence file (new Annex D.6.0).

Version	Date	Classification	Summary
			§2.7 renamed "Data Quality" → "Data Sources" with an Annex C cross-reference; §2.7.1 reconciled to "Standard LCI Database". **DFU energy descriptor** clarified to state both the ≈2,200 kcal divisor-set total and the WHO RDI 2,000 kcal/day reference. **"CB" defined at first use** (§1.1). **Standards positioning:** added §2.5.3 ISO/IEC 17011 (accreditation chain) and §2.5.4 ISO/IEC 17067 (classified as a Type 6 scheme — certification of the provider's assessment process/service with ongoing surveillance). **Cross-references** added between the provider regression suite (§12.5) and CB claim sampling (§11.x). Functional-unit B2B scoping and hierarchical boundaries are tabled for a Working Group options paper, not changed here. View changes
0.3.7-draft	2026-05-01	Minor	**Trader binding architecture and framework leanness.** Following CB feedback (TÜV Rheinland, April 2026) and an internal scheme-leanness audit, the framework is sharpened along two axes. **Trader binding (§1.2.2, §8.2.1, §10.3.1.1, §11.4.6, new Annex G, new PA-10):** the scheme now distinguishes Enhanced Assurance (per-trader licence, on-pack claims, individually listed) from Standard Assurance (provider-mediated AGB pass-through, menu claims, aggregate listing) as the trader-binding architecture. New Annex G defines the model pass-through clauses any provider's customer terms must incorporate; new PA-10 of the pathway annex template documents the implementation. Aligns with MSC Consumer-Facing Organisation and Fairtrade National Fairtrade Organisation licensee precedents. **CB evaluation methodology (CB-01 §1.4, CB-03 renamed):** the prescriptive evaluation methodology in CB-03 is reclassified as informative (companion document) per ISO/IEC 17065 §7.4 which places evaluation-procedure responsibility with the CB. **Public regression display (§1.5.1, §12.5.5):** the framework now requires that each certified pathway publish a regression test summary on its public verification page; the pathway-specific implementation details remain at PA-07.1. View changes
0.3.6-draft	2026-04-28	Minor	**Floor consolidated.** The four-dimension recognised-options menu introduced in v0.3.5 is consolidated back to a uniformly mandatory floor for **LCIA method** (EF 3.1 only), **rating system** (A–E only), and **functional unit** (DFU only). **Claim type** is reframed from a menu into a scope-and-roadmap statement: Climate is in EmpCo scope for Sept 2026; Water /

Version	Date	Classification	Summary
			Nutrition / Animal welfare / Deforestation are operationally supported by some pathways but not in EmpCo-certified scope. **Regression suite minimum** added to §12.5 (≥ 300 items spanning ≥ 3 input cases) so providers cannot declare an undersized suite in PA-07.1. **Provider-specific bleed** across §3, §5, §6, §7, §12, CB-02, CB-03, Annex C cleaned up (30 hits resolved, scheme PDF reduced from 2,322 KB to 2,285 KB). The framework is now defensible under EmpCo Article r(iii) without relying on bounded menus that left abuse paths (AR6 raw without EF sub-indicators; "none" rating for a consumer labelling scheme). View changes
0.3.5-draft	2026-04-28	Minor	**Modular floor (transitional, superseded by v0.3.6).** Following Sophie Erhart's reply (28 April 2026), §1.4 was restructured around module catalogues. Four dimensions became recognised-options menus: LCIA method (EF 3.1 preferred, IPCC AR6 GWP100 raw acceptable; AR5 dropped); functional unit; rating system (A–E / percentile / traffic light / numeric / none); claim type (Climate / Water / Nutrition / Animal welfare / Deforestation). Pathway annex template gained PA-09 (Declared Module Choices). v0.3.5 was published only briefly as a draft; on review the LCIA and rating-system menus opened abuse paths (AR6 raw without EF 3.1 sub-indicator structure; "none" rating for a consumer labelling scheme) and were rolled back in v0.3.6. The framework / pathway split, regression-suite-out-of-framework, portal-nav restructure, PA-09 table, and the two companion documents introduced in v0.3.5 are all retained. View changes
0.3.4-draft	2026-04-27	Major	**Methodology-neutral framework restructure.** In response to ESFC EmpCo Working Group feedback, the scheme has been generalised so that ESFC owns and governs a methodology-neutral framework rather than describing a single specific provider's calculation system. Two-level certification model introduced (provider-level + trader-level). Section 4 (Rating Criteria) rewritten as a **requirements** document; specific A–E thresholds and benchmark values are now part of certified provider pathway documentation rather than scheme normative content. Annexes A (Rating Thresholds), B (Benchmark Data), and E (EOS Architecture) moved out of the framework onto the *provider/eaternity* branch. Section 5 (Methodology) rewritten as methodology **requirements** rather than methodology **description**. Sections 6, 7, 9, 10,

Version	Date	Classification	Summary
			11, governance, and CB documents systematically genericised: provider/trader/pathway terminology replaces references to specific calculation engines, ingredient databases, and product names. EF 3.1 retained as the mandatory LCIA method. The Sept 2026 release is scoped to climate-impact claim verification only. View changes
0.3.3-draft	2026-04-21	Major	**Scheme ownership** transferred to the **European Sustainable Food Coalition (ESFC)** (esf-coalition.org). Scheme renamed to "ESFC EmpCo Certification Scheme"; acronym EmpCo retained. Eaternity AG becomes founding reference implementer. Governance, copyright, contact addresses, and legal structure rewritten for the ESFC/provider split. **LCIA method** updated from IPCC AR5 to **Environmental Footprint (EF) 3.1** (JRC130796, 2023), built on IPCC AR6 (2021) GWP100; climate change now reported as fossil / biogenic / LULUC / total sub-indicators per EU PEF. Annex D fully rewritten. The 2026-03 benchmark (3,728 g CO2eq/DFU) remains AR5-characterised; EF 3.1 recalculation scheduled for next benchmark refresh (Annex D.6.2). Per-doc version headers on all 25 documents bumped to 0.3.3-draft / 2026-04-21. View changes
0.3.2-draft	2026-03-27	Minor	Reduce verbosity in Sections 06/07/08 (Enhanced/Standard merged into comparison tables). Replace scientific partners table with general foundation statement. Recalculate benchmarks from 2026-03 data: CO2 3,728 g/DFU, Water 109.56 L/DFU, Vita-Score 336 pts/DFU with updated percentile thresholds. Add GitLab CI/CD pipeline, issue/MR templates, benchmark pipeline, portal complaint form. View changes
0.3.1-draft	2026-03-07	Minor	Expand regression test suite (Section 12.5): add three-case input coverage (Caterer/Label-Retail/Full Specification), per-case materiality reporting, submission fidelity requirement, and deterministic generation specification (Section 12.5.5). Fix pipeline illustration rendering and table column widths in Section 7. Add Document History appendix. Add public transparency portal references. Full layout sweep. View changes
0.3.0-draft	2026-02-06	Major	Replace Score/Gastro distinction with assurance levels (Enhanced/Standard). Add change management (EmpCo-12) with three-tier classification, materiality thresholds, and regression test suite. Introduce outcome-based QA requirements. Add enterprise data integration pathway. View changes

Version	Date	Classification	Summary
0.2.0-draft	2026-02-06	Major	Add Gastro delivery mode coverage. Scheme now explicitly covers both Eaternity Score (expert-reviewed) and Eaternity Gastro (automated) assessment pathways. Add Annex E (EOS Architecture). View changes
0.1.0-draft	2026-02-06	—	Initial scheme documentation structure. 12 scheme documents, 4 governance documents, 3 CB documents, 4 technical annexes. CC BY 4.0 license. View changes