

EATERNITY AG — ZURICH

# Eaternity EOS Provider Pathway Annex

under the ESFC EmpCo Certification Scheme

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**Pathway ID** eaternity-eos

**Pathway Version** 1.6.8-draft

**Status** Applicant pathway — prepared for the initial validation engagement; not yet validated

**Framework Version** EmpCo v0.5.8-draft-vv

**Date** 2026-08-18

Submitted under the canonical pathway annex template (PA-01..PA-08)

Applicant pathway — not yet validated

# About This Annex

This document is a **provider pathway annex** under the methodology-neutral EmpCo framework owned and governed by the European Sustainable Food Coalition (ESFC). The framework defines a normative floor (DFU functional unit, A–E rating system, system boundaries, cut-off criteria, evidence file structure, QA outcome requirements, change management process; the LCIA method is pathway-declared under an AR6-generation guardrail, scheme §1.4.3). Provider pathway annexes describe how a specific provider’s calculation system meets that floor, and what the pathway declares on the variation surface (LCIA method, LCI database, calculation engine, gap-filling logic, benchmark, QA delivery).

**Pathway:** This annex documents the **Eaternity Environmental Operating System (EOS)** operated by Eaternity AG. EOS is one possible certified pathway under EmpCo; other ESFC members may submit their own pathway annexes following the same canonical template.

**Framework references:** All references to scheme sections (e.g. “Section 6.5”, “Annex D”) refer to the EmpCo framework documents at [gitlab.com/eaternity/empco/main/scheme](https://gitlab.com/eaternity/empco/main/scheme). The framework defines the requirements; this annex confirms compliance.

**Status:** Applicant pathway — not yet validated. The scheme owner dispatched the RFP to accredited conformity assessment bodies on 2026-07-29 (offers due 14 Aug 2026); validation of the Eaternity EOS pathway is targeted ahead of the 27 September 2026 EmpCo application date.

## PA-01: Provider Identity

| Field                              | Value                                                                                   |
|------------------------------------|-----------------------------------------------------------------------------------------|
| Provider name                      | Eaternity AG                                                                            |
| Pathway ID                         | eaternity-eos                                                                           |
| Pathway version                    | 1.6.8-draft                                                                             |
| Jurisdiction of registration       | Switzerland (CH); Aktiengesellschaft, registered in Zurich                              |
| Primary office                     | Zurich, Switzerland                                                                     |
| Operational language(s)            | German, English                                                                         |
| Contact (technical)                | tech-support@eaternity.ch                                                               |
| Contact (commercial)               | mail@eaternity.org                                                                      |
| Contact (compliance / VVB liaison) | compliance@eaternity.ch                                                                 |
| Public website                     | <a href="https://eaternity.org">eaternity.org</a>                                       |
| VVB engagement status              | Offer requested (RFP dispatched by the scheme owner 2026-07-29; offers due 14 Aug 2026) |

### PA-01.1 Organisation, Competence and Infrastructure (ISO 14067 §C.2)

Per ISO 14067:2018 §C.2, the operator of a CFP systematic approach shall define responsibilities, competence, and infrastructure, and watch for changing conditions that could make CFPs unrepresentative. For this pathway:

| C.2 element                   | Implementation                                                                                                                                                                                                                                      |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Top-management responsibility | The managing director owns the pathway; the head of methodology owns scientific validity; the head of engineering owns the calculation infrastructure (see Sign-off).                                                                               |
| Competence (LCA)              | Methodology team with LCA training and publication record; onboarding curriculum for analysts; annual methodology review cycle.                                                                                                                     |
| Infrastructure                | Production EOS platform (versioned releases), EDB (versioned), CI pipeline executing the regression suite on every release, evidence-file store, public portal.                                                                                     |
| Watch on changing conditions  | EDB update log (background-data drift), ≥300-item regression suite on every release (behavioural drift), QA outlier detection (input drift), annual benchmark review (market drift). Any signal is classified through change management (EmpCo-12). |

## PA-02: Pathway Scope

### PA-02.1 Product Scope

This pathway covers:

- All food and beverage products in the FoodEx2 classification covered by the Eaternity Database (EDB), including packaged food, fresh produce, prepared meals, and processed products
- Restaurant recipes and menu items composed of ingredients in the EDB

**Coverage:** ≈2,330 food products with complete life-cycle inventories in the published snapshot; convenience products are resolved to these via FoodEx2 matching.

**Exclusions:** Pet food, supplements, and non-edible food adjacents are out of scope.

### PA-02.2 Geographic Scope

- **Primary markets:** Switzerland, EU, EEA, UK
- **Origin coverage:** Global; production-region-specific data where available, default-region fallback otherwise
- **Trade-flow data source:** FAO trade statistics for origin assignment

### PA-02.3 Claim Scope

This pathway can substantiate:

- **Climate-impact claims** (mandatory under EmpCo Sept 2026 release): cradle-to-grave product carbon footprint per declared functional unit, using EF 3.1 / IPCC AR6 GWP100
- **Water-footprint claims** (deferred under EmpCo Sept 2026, available in pathway): AWARE-weighted water consumption
- **Nutrition claims** (deferred): Vita Score based on WHO/GBD risk factors
- **Animal welfare claims** (deferred): certification-based A/B/E
- **Deforestation-risk claims** (deferred): origin and certification-based A/B/E

For the September 2026 EmpCo pilot, only climate-impact claim verification is in scope.

### PA-02.4 Assurance Levels

This pathway offers:

- Individual Assurance via questionnaire (**Eaternity Score:** expert-reviewed product assessments)
- Individual Assurance via validated automated pipeline (**enterprise data integration**, e.g. retailer ERP systems) — *planned; not yet operational. Operational today: questionnaire intake (Individual) and ERP/API integrations on the Collective (food-service) side*
- Collective Assurance via automated pipeline (**Eaternity Gastro:** automated recipe assessments)

## PA-03: Functional Unit

- **Declared functional unit:** Daily Food Unit (DFU)
- **Definition / formula:**

$$\text{DFU} = (\text{protein\_ratio} + \text{fat\_ratio} + \text{energy\_ratio} + \text{water\_ratio} + \text{dry\_weight\_ratio}) / 5$$

where:

$$\begin{aligned} \text{protein\_ratio} &= \text{g\_protein} / 50 \\ \text{fat\_ratio} &= \text{g\_fat} / 66 \\ \text{energy\_ratio} &= (\text{kJ\_energy} - 17 \cdot \text{g\_protein} - 37 \cdot \text{g\_fat}) / 6000 \\ \text{water\_ratio} &= \text{g\_water} / 2500 \\ \text{dry\_weight\_ratio} &= (\text{g\_mass} - \text{g\_water}) / 600 \end{aligned}$$

As operated: one DFU corresponds to one day's food intake of a reference adult across five label-available dimensions. **Planned revision (announced):** a consistent WHO/FAO 2,000-kcal / 60-kg reference frame with a 5,076 kJ rest-energy denominator and a macro-stripped dry-matter term (mass — water — protein — fat, denominator 325 g); open-source reference implementation `lci-dfu` ([gitlab.com/eos-lci/lci-dfu](https://gitlab.com/eos-lci/lci-dfu)), publication in preparation. Adoption is **scheduled ahead of the initial validation engagement** (re-baselining decision of 2026-08-07): one re-baselining step together with the UVEK/BAFU background deployment and the EF 3.1/AR6 benchmark recalculation, with benchmark and rating thresholds re-baselined in the same step. The validation subject is the system as operated at engagement start — planned to be the revised stack. After validation, any further change of the unit is a major change under EmpCo-12.

- **Rationale:** Comparing environmental impacts per kilogram is misleading across food categories (1 kg lettuce vs. 1 kg beef serve different nutritional purposes). The DFU normalises impacts to a comparable nutritional basis, enabling fair comparison across food categories.
- **Label disclosure and comparability class:** the functional unit underlying a rating is stated wherever the rating is shown (packaging, menu, digital). The pathway's comparability class is **DFU** — comparisons are presented as like-for-like only against other DFU-based ratings, never across functional units.
- **Consistency rule:** All comparative claims within a portfolio use the DFU. The pathway also supports per-kg and per-serving expressions for traders that prefer them; in these cases, the trader's claim explicitly states the functional unit and the DFU equivalent is included in the evidence file.

## PA-04: LCI Database

| Field                       | Value                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Primary LCI database</b> | Eaternity Database (EDB)                                                                                                                                                                                                                                                                                                                                                       |
| <b>Database version</b>     | Current published snapshot: <b>EDB 2026.1 — Alpha (UVEK/BAFU Background)</b> , the UVEK/BAFU-background release; versions and per-product values published in the change log                                                                                                                                                                                                   |
| <b>Provenance</b>           | Built from primary data (supplier-submitted), peer-reviewed published LCA studies, and validated background data from the <b>open UVEK/BAFU-based LCI database</b> on the <b>BAFU:2026</b> datasets, developed in the LCI Workbench programme (public data basis; open repository at <a href="https://gitlab.com/eos-lci/lci-workbench">gitlab.com/eos-lci/lci-workbench</a> ) |
| <b>Coverage</b>             | ≈2,330 food products with complete life-cycle inventories in the current published snapshot (per-product values on the public changelog); convenience products resolved via FoodEx2 matching                                                                                                                                                                                   |
| <b>Update cadence</b>       | Continuous additions (minor changes per EmpCo-12); version snapshots released approximately twice per year                                                                                                                                                                                                                                                                     |
| <b>Public documentation</b> | EDB changelog at <a href="https://empco.eaternity.org/changelog.html">empco.eaternity.org/changelog.html</a>                                                                                                                                                                                                                                                                   |

### PA-04.1 Background Data

| Source                                                   | Used for                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Open UVEK/BAFU-based LCI database (LCI Workbench)</b> | The background LCI basis (energy, transport, materials, agriculture, waste treatment) — built on the Swiss federal UVEK/BAFU datasets, extended by documented tributary layers; public data basis, per-product values published on the EDB changelog                                                                                                                                                         |
| <b>Further reference data</b>                            | The complete, versioned inventory of reference data sources (national statistics, nutrient databases, trade flows, transport and climate data) is maintained in the EDB documentation and disclosed in full to the VVB during the engagement; individual sources are named in PA-05.2 where they drive a gap-filling module. A static list is deliberately not duplicated in this annex — it would go stale. |

*Migration status (as-operated, 2026-08-05):* the production system currently computes on the EDB's legacy proprietary background (ecoinvent-based); the UVEK/BAFU background is the **current published snapshot** (EDB 2026.1 — Alpha, per-product values on the EDB changelog) and its deployment to production is scheduled **ahead of the initial validation engagement** (switch-first decision of 2026-07-14; per the re-baselining decision of 2026-08-07, the announced DFU revision and the EF 3.1/AR6 benchmark recalculation are deployed in the same pre-engagement re-baselining step). The validation engagement subject is the system as operated at engagement start; this note is updated upon deployment.

## PA-05: Calculation Engine and Gap-Filling Logic

### PA-05.1 Calculation Engine

| Field                                   | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engine name                             | Environmental Operating System (EOS)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Engine version                          | Semantic-versioned (MAJOR.MINOR.PATCH); the version current at engagement start is pinned in each claim's evidence file and published in the change log                                                                                                                                                                                                                                                                                                                            |
| Architecture                            | Graph-based directed acyclic graph (DAG) of gap-filling modules; factory/worker pattern (Factory: singleton per service instance with database connections, caches, configuration; Worker: per-node calculation logic; Orchestrator: dependency-resolved execution order)                                                                                                                                                                                                          |
| Open-source / proprietary               | <b>Methods open source:</b> the methodology is publicly documented and the method implementations are published as open-source packages — functional unit ( <code>lci-dfu</code> ), the open UVEK/BAFU-based background LCI programme, the offline reference oracle and the regression suite (public repositories under <a href="https://gitlab.com/eos-lci">gitlab.com/eos-lci</a> ). The production platform code is proprietary but auditable by the VVB at any level of detail |
| Determinism requirement (design target) | Given identical inputs + EOS version + EDB version, EOS shall produce identical outputs; no external runtime state shall affect calculation. Monitored via the regression test suite (PA-07.1); formal bit-identity verification is part of the QA evidence prepared for the validation engagement.                                                                                                                                                                                |
| Underlying frameworks                   | In-engine matrix-based LCA ( <code>matrix_calculation_gfm</code> ); CVXPY for ingredient-amount estimation by convex optimisation; Brightway-based tooling for LCI database import and for the independent recompute of published EDB values (see PA-05.3)                                                                                                                                                                                                                         |

### PA-05.2 Gap-Filling Logic

EOS includes **27 gap-filling modules** organised into 9 functional categories:

| Category                    | Modules                                                                                                   | Function                                                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Graph Building (4)</b>   | add_client_nodes_gfm, merge_linked_nodes_gfm,<br>ingredient_splitter_gfm, inventory_connector_gfm         | Construct and manage the calculation graph: load ingredient nodes, merge linked products, split composite ingredients, connect to LCI data |
| <b>Product Matching (4)</b> | match_product_name_gfm, attach_food_tags_gfm,<br>link_food_categories_gfm, link_term_to_activity_node_gfm | Match ingredient names to FoodEx2 terms, attach classification                                                                             |

| Category                         | Modules                                                                              | Function                                                                                                              |
|----------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                  |                                                                                      | cation tags, link to LCA activity processes                                                                           |
| <b>Ingredient Analysis (3)</b>   | ingredient_amount_estimator_gfm, nutrient_subdivison_gfm, unit_weight_conversion_gfm | Estimate ingredient quantities (CVXPY), subdivide into nutrient-based variants, convert units to standardised weights |
| <b>Location &amp; Origin (2)</b> | origin_gfm, location_gfm                                                             | Determine geo-graphic origin                                                                                          |

| Category                  | Modules                                                          | Function                                                                                                                                                                                             |
|---------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |                                                                  | using<br>FAO<br>trade<br>statistics;<br>resolve<br>detailed<br>location<br>data                                                                                                                      |
| <b>Transportation (2)</b> | transportation_decision_gfm,<br>transportation_mode_distance_gfm | Determine<br>transport<br>mode<br>(road,<br>rail,<br>sea,<br>air)<br>based<br>on<br>distance<br>and<br>perishability;<br>calculate<br>route<br>distances<br>and<br>emissions<br>using<br>Eco-Transit |

| Category                                 | Modules                                                                           | Function                                                                                                               |
|------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Processing &amp; Conservation (4)</b> | greenhouse_gfm, processing_gfm, conservation_gfm, perishability_gfm               | Model greenhouse cultivation (Meteorological data), food processing steps, storage/cold chain, food loss/waste factors |
| <b>Impact Calculation (4)</b>            | impact_assessment_gfm, matrix_calculation_gfm, water_scarcity_gfm, rainforest_gfm | Compute CO <sub>2</sub> eq using EF 3.1 / IPCC AR6 GWP100 (fossil/biogenic/LU-LUC sub-indicators), per-                |

| Category                | Modules                                         | Function                                                                                    |
|-------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------|
|                         |                                                 | form matrix-based LCA, calculate AWARE-weighted water scarcity, evaluate deforestation risk |
| Nutrition & Scoring (2) | vitascoring_gfm, daily_food_unit_gfm            | Calculate nutritional quality (WHO/GBD), compute Daily Food Unit                            |
| Aggregation (2)         | aggregation_gfm, post_nutrients_aggregation_gfm | Aggregate ingredient-level results to                                                       |

| Category | Modules | Function                    |
|----------|---------|-----------------------------|
|          |         | product/<br>recipe<br>level |

**Conservatism rules:** Where data is uncertain, EOS applies conservative defaults (worse case for the assessed product). All assumptions are recorded in the evidence file (Section 6.5 of the framework).

**Calibration:** Gap-filling modules are calibrated against PEFCRs and published LCA data. The calibration set is reviewed annually.

**Audit trail:** Every gap-filling decision (module, inputs, decision logic, output) is recorded in the evidence file per the framework’s Section 6.5.

### PA-05.3 LCIA Integration and Independent Recompute

Per-assessment LCIA is computed **in-engine** (`impact_assessment_gfm` / `matrix_calculation_gfm`, matrix-based). The Brightway open-source LCA framework serves two supporting roles outside the per-assessment runtime:

- **Inventory import:** LCI databases are imported and identified via Brightway datasets (EDB entries reference Brightway dataset identities), giving direct compatibility with standard LCI databases in Brightway format.
- **Independent recompute:** published per-product EDB values are reconciled against an authoritative Brightway recompute in the open LCI Workbench toolchain — an external matrix-based cross-check of the in-engine results. The published offline-oracle parity report reproduces production EOS to a median deviation of 0.05% across the 600-item regression suite.
- **Transparency:** the recompute toolchain is open source and auditable.

### PA-05.4 Assurance-Level Execution Paths

Both assurance levels execute the same gap-filling pipeline. The difference is input data completeness, not calculation methodology:

| GFM Stage                                                                 | Individual Assurance Input       | Collective Assurance Input |
|---------------------------------------------------------------------------|----------------------------------|----------------------------|
| Product Matching ( <code>match_product_name_gfm</code> )                  | Expert-verified match (Tier 1–2) | Automated match (Tier 4)   |
| Location & Origin ( <code>origin_gfm</code> , <code>location_gfm</code> ) | Company-pro-                     | GFM-estimated or           |

| <b>GFM Stage</b>                                                                                            | <b>Individual Assurance Input</b>           | <b>Collective Assurance Input</b> |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------|
|                                                                                                             | vided origins                               | company-provided                  |
| Processing & Conservation ( <code>greenhouse_gfm</code> , <code>processing_gfm</code> )                     | Company-provided certifications and methods | GFM-estimated or company-provided |
| Transportation ( <code>transportation_decision_gfm</code> , <code>transportation_mode_distance_gfm</code> ) | Company-provided routes (where available)   | Fully estimated from routes       |
| Impact Calculation ( <code>impact_assessment_gfm</code> , <code>matrix_calculation_gfm</code> )             | Same calculation engine                     | Same calculation engine           |
| Nutrition & Scoring ( <code>daily_food_unit_gfm</code> , <code>vitascore_gfm</code> )                       | Same thresholds                             | Same thresholds                   |

When Collective Assurance receives the same quality of input data as Individual Assurance, it produces the same results. The key difference is data specificity, not calculation methodology.

## PA-05.5 Version Control and Release Management

EOS follows the validated change management process defined in framework EmpCo-12. EOS releases follow semantic versioning:

| <b>Component</b>                | <b>Version Format</b>         | <b>Example</b> |
|---------------------------------|-------------------------------|----------------|
| <b>EOS engine</b>               | MAJOR.MINOR.PATCH             | 1.2.3          |
| <b>EDB (Eaternity Database)</b> | Year.Release                  | 2026.1         |
| <b>GFM modules</b>              | Versioned with engine release | —              |

**Release artefacts.** Every EOS release includes:

- Tagged source code with a unique version identifier
- Changelog documenting all changes since the previous release, classified per the three-tier change management system
- Regression test results against the reference dataset (per PA-07.1)
- Materiality analysis for any changes classified as minor or major

**Reproducibility.** Given the same EOS version and EDB version, assessments are fully reproducible:

- All calculation parameters are determined by the engine version and database version
- No external runtime state affects calculation outputs
- Assessment records include the EOS version and EDB version used, enabling full traceability

**Database versioning.** The Eaternity Database (EDB) is versioned separately from the engine:

- **Core ingredients:** ~950 entries with full LCA data
- **Convenience products:** ~565,000 entries mapped via FoodEx2 taxonomy
- Database updates follow the same change classification process as engine changes
- Each database release is immutable once published; corrections are issued as new releases

## PA-06: Rating System

The Eaternity pathway operates a 5-symbol rating system (**A** through **E**, where **A is best**) across five environmental indicators. The same rating thresholds apply regardless of assurance level.

### PA-06.1 Scale

- **Scale type:** A–E letter grades
- **Number of categories:** 5 (A, B, C, D, E), with simplified A/B/E (no C/D) for Animal Welfare and Rainforest indicators
- **Indicator coverage:** Climate Score, Water Footprint, Vita Score, Animal Welfare, Rainforest

### PA-06.2 Thresholds

#### Climate Score

| Rating   | Threshold (g CO <sub>2</sub> eq/DFU) | Derivation        | Scientific basis                                                               |
|----------|--------------------------------------|-------------------|--------------------------------------------------------------------------------|
| <b>A</b> | < 1,947                              | Benchmark × 0.5   | 50% reduction target aligned with IPCC and Eat-Lancet for planetary boundaries |
| <b>B</b> | < 3,894                              | Benchmark × 1.0   | Below average = positive contribution                                          |
| <b>C</b> | < 7,787                              | Benchmark × 2.0   | Up to twice the average                                                        |
| <b>D</b> | < 15,574                             | Benchmark × 4.0   | Up to four times the average                                                   |
| <b>E</b> | ≥ 15,574                             | Above D threshold | More than four times the average                                               |

**Threshold values are as-operated and subject to scheduled recalibration.** The numeric thresholds above derive from the currently declared benchmark under the currently operated DFU. Three announced updates shift the numbers (not the shape): the benchmark snapshot update, the EF 3.1/AR6 recalculation, and the announced DFU revision (PA-03). All three land in **one scheduled re-baselining ahead of the initial validation engagement** (decision of 2026-08-07), published on the benchmark page and in the change log. The stable declaration is the derivation — A = benchmark × 0.5 (the science-based defined-term threshold), factor-two spacing for B/C/D/E. After validation, any further threshold change is a major change under EmpCo-12.

**Defined-term qualification (“Climate-friendly”, EmpCo-08 Section 8.3.1):** the pathway’s declared A threshold (1,947 g CO<sub>2</sub>eq/DFU) is exactly 50% below its declared benchmark (3,894 g CO<sub>2</sub>eq/DFU), so products achieving the A rating qualify for the scheme-defined term “Climate-friendly”. This is a standing commitment: under any benchmark recalibration (including the pending EF 3.1 / IPCC AR6 refresh), the A threshold remains at no more than 50% of the then-current declared benchmark.

The **A rating** threshold (50% reduction) is a science-based target aligned with the Eat-Lancet Commission and IPCC recommendations for food-system emissions.

**Note (benchmark recalibration pending):** The benchmark above (3,894 g CO<sub>2</sub>eq/DFU) was characterised under IPCC AR5. The 2026-03 snapshot under updated water imputation produces 3,728 g CO<sub>2</sub>eq/DFU. Recalculation under EF 3.1 / IPCC AR6 is scheduled for the next benchmark

refresh; the AR5→AR6 shift is  $\leq 5\%$  and uniform across the sample, so rating assignments are unaffected. See framework Annex D Section D.6.2.

## Water Footprint

| Rating   | Threshold (Litres/DFU) | Meaning                      |
|----------|------------------------|------------------------------|
| <b>A</b> | < 91.6                 | Better than average          |
| <b>B</b> | < 183.1                | Up to twice the average      |
| <b>C</b> | < 366.2                | Up to four times the average |
| <b>D</b> | < 1,059.9              | Below critical threshold     |
| <b>E</b> | $\geq 1,059.9$         | Above critical threshold     |

*Note (benchmark snapshot):* the water thresholds derive from the 2022 benchmark (91.57 L/DFU); the 2026-03 snapshot produces **109.56 L/DFU** (+19.6%). Recalibration at the next benchmark refresh; water is not in EmpCo-licensed scope, so no licensed rating is affected.

## Vita Score

| Rating   | Threshold (Health Points/DFU) | Meaning                 |
|----------|-------------------------------|-------------------------|
| <b>A</b> | < 280                         | 20% better than average |
| <b>B</b> | < 340                         | Average or better       |
| <b>C</b> | < 420                         | Worse than average      |
| <b>D</b> | < 468                         | Significantly worse     |
| <b>E</b> | $\geq 468$                    | Worst category          |

*Note (benchmark snapshot):* the 2026-03 snapshot produces **335.7 health points/DFU** (weighted mean); recalibration with the pending vita re-export. Nutrition is not in EmpCo-licensed scope, so no licensed rating is affected.

## Animal Welfare

| Rating   | Criteria                                                                                                                                              |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b> | No animal products, OR all animal-derived ingredients from certified sources (Certified Humane, Animal Welfare Approved, organic livestock standards) |
| <b>B</b> | Mix of certified and non-certified animal-derived ingredients                                                                                         |
| <b>E</b> | Non-certified animal-derived ingredients without welfare certification                                                                                |

C and D are not used for Animal Welfare.

## Rainforest

| Rating   | Criteria                                                                                                                                |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b> | No critical (deforestation-linked) products, OR all critical ingredients from certified sources (Rainforest Alliance, RSPO, equivalent) |

| Rating   | Criteria                                                |
|----------|---------------------------------------------------------|
| <b>B</b> | Mix of certified and non-certified critical ingredients |
| <b>E</b> | Contains non-certified deforestation-linked ingredients |

Critical products include: soy, palm oil, cocoa, coffee, beef, and timber from high-risk deforestation regions. C and D are not used for Rainforest.

## PA-06.3 Benchmark Dataset

| Field                                | Value                                                                                                                                                            |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample size</b>                   | 160,545 products from 150 food service businesses                                                                                                                |
| <b>Geographic and temporal scope</b> | Primarily Switzerland, 2019–2021                                                                                                                                 |
| <b>Sample selection method</b>       | Restaurant consumption data, system catering for businesses, industry, schools, universities, and healthcare                                                     |
| <b>Bias controls</b>                 | Sample deliberately excludes Eaternity customers to avoid selection bias                                                                                         |
| <b>Benchmark value</b>               | 3,894 g CO <sub>2</sub> eq/DFU (AR5-characterised); 3,728 g CO <sub>2</sub> eq/DFU (2026-03 snapshot, water-imputation update); EF 3.1/AR6 recalculation pending |
| <b>Derivation method</b>             | $\text{AVERAGE\_KG\_CO}_2\_\text{PER\_FOOD\_UNIT} \times 5 \text{ FU/DFU} \times 1000$                                                                           |
| <b>Update cadence</b>                | Reviewed annually; recalculated when characterisation factors update or sample composition shifts materially                                                     |

**Validation:** The bottom-up benchmark (~3.9 kg/DFU, ~2 t CO<sub>2</sub>eq/person/year for food) aligns with the top-down estimate from Crippa et al. (2021, *Nature Food*): 34% of global anthropogenic GHG emissions (~17 Gt CO<sub>2</sub>eq/year), yielding ~2.1 t per person per year for food.

## Consumption-Level Projections

| Consumption Level              | Daily CO <sub>2</sub> eq | Annual CO <sub>2</sub> eq |
|--------------------------------|--------------------------|---------------------------|
| Recommended (2,000 kcal)       | 3.89 kg                  | 1.42 tonnes               |
| Worldwide average (2,870 kcal) | 5.58 kg                  | 2.04 tonnes               |
| Germany average (3,500 kcal)   | 6.81 kg                  | 2.49 tonnes               |

## Category-Specific Emissions (per Food Unit)

Complete emissions data from the benchmark sample (2019–2021):

| Category          | CO <sub>2</sub> /FU (kg) | Notes                           |
|-------------------|--------------------------|---------------------------------|
| Seasoning         | 1.825                    | Includes dried spices, oils     |
| Milk alternatives | 1.611                    | Often from water-scarce regions |
| Beverages         | 1.288                    | Includes carbonation energy     |
| Meat products     | 1.275                    | Lowest processing share (4%)    |

| Category          | CO <sub>2</sub> /FU (kg) | Notes                          |
|-------------------|--------------------------|--------------------------------|
| Fish/seafood      | 1.259                    | Low processing share (4%)      |
| Yoghurt           | 1.139                    | Includes fermentation          |
| Cheese            | 0.825                    | Minimal processing (1%)        |
| Potato products   | 0.804                    | Highest processing share (53%) |
| Sweets            | 0.778                    | Includes chocolate             |
| Eggs              | 0.666                    | —                              |
| Fruits/Vegetables | 0.651                    | Varies widely by type          |
| Cereals           | 0.650                    | —                              |
| Dessert           | 0.629                    | —                              |
| Snacks            | 0.603                    | —                              |
| Pasta/Spätzli     | 0.562                    | —                              |
| Chocolate         | 0.527                    | —                              |
| Sauces/Pastes     | 0.472                    | —                              |
| Legumes           | 0.452                    | —                              |
| Bakery products   | 0.422                    | —                              |
| Muesli            | 0.424                    | —                              |
| Meat alternatives | 0.406                    | Plant-based                    |
| Nuts/Seeds        | 0.366                    | —                              |
| Margarine/Oil     | 0.255                    | Lowest emission density        |

## Processing Emission Contributions

Food processing adds approximately **6% to total CO<sub>2</sub> emissions** on average. The calculation considers 22 distinct processing steps:

| Category                  | Steps                                                                 |
|---------------------------|-----------------------------------------------------------------------|
| <b>Heat treatments</b>    | Baking, cooking, grilling/frying, deep frying, pasteurising, roasting |
| <b>Physical processes</b> | Cutting, crushing, mixing, pressing, extraction, filtering            |
| <b>Preservation</b>       | Drying, smoking, cooling, freezing, freeze drying                     |
| <b>Other</b>              | Carbonating, fermenting, germination, distilling, storage             |

**Processing share by category** (the proportion of a category's CO<sub>2</sub> footprint attributable to processing rather than agricultural production):

| Category          | Base CO <sub>2</sub> (kg, sample total) | Processing CO <sub>2</sub> (kg) | Processing Share |
|-------------------|-----------------------------------------|---------------------------------|------------------|
| Potato products   | 59,462                                  | 67,296                          | <b>53%</b>       |
| Insects           | 473                                     | 278                             | <b>37%</b>       |
| Milk alternatives | 27,112                                  | 13,946                          | <b>34%</b>       |
| Soups             | 858                                     | 334                             | <b>28%</b>       |

| Category          | Base CO <sub>2</sub> (kg, sample total) | Processing CO <sub>2</sub> (kg) | Processing Share |
|-------------------|-----------------------------------------|---------------------------------|------------------|
| Beverages         | 699,738                                 | 245,729                         | <b>26%</b>       |
| Legumes           | 13,946                                  | 4,779                           | <b>26%</b>       |
| Convenience foods | 182,184                                 | 58,859                          | <b>24%</b>       |
| Bakery products   | 1,029,735                               | 249,960                         | <b>20%</b>       |
| Seasoning         | 204,860                                 | 50,211                          | <b>20%</b>       |
| Fruits/Vegetables | 698,646                                 | 162,174                         | <b>19%</b>       |
| Meat alternatives | 25,954                                  | 6,143                           | <b>19%</b>       |
| Meat products     | 1,922,423                               | 73,913                          | <b>4%</b>        |
| Fish/seafood      | 374,064                                 | 16,831                          | <b>4%</b>        |
| Cheese            | 660,794                                 | 9,271                           | <b>1%</b>        |

*Interpretation:* Products with high inherent emissions (meat, fish, cheese) show low processing shares because the agricultural production phase dominates. Products with low inherent emissions (potatoes, legumes) show high processing shares because cooking and preparation energy becomes the dominant factor.

## Data Sources

| Source                          | Used for                                                              |
|---------------------------------|-----------------------------------------------------------------------|
| <b>Primary purchasing data</b>  | 160,545 products from 150 businesses (benchmark derivation)           |
| <b>Eaternity Database (EDB)</b> | Emission factors for ingredients, origins, production methods         |
| <b>Ecoinvent</b>                | Background LCA data (energy, transport, materials)                    |
| <b>Agribalyse</b>               | Agricultural production data (complementary source)                   |
| <b>Scientific literature</b>    | Crippa et al. (2021), Springmann et al. (2018), IPCC AR6 (validation) |

## Update Schedule

The benchmark data is reviewed annually. A full benchmark recalculation is triggered when:

- New comprehensive purchasing data becomes available
- Significant changes in food consumption patterns are documented
- Updated emission factors in the underlying databases materially affect the average
- Stakeholder review identifies a need for recalibration

## PA-06.4 Borderline Handling

Products and recipes scoring near a rating threshold receive enhanced sensitivity analysis on high-impact parameters, are documented for proximity to threshold, and are flagged for priority review during VVB sample-based verification (per framework Section 4.6 and Section 7.5).

## PA-06.5 Uncertainty and Rating Stability

Rating threshold intervals are wide enough (factor of 2 between B/C, factor of 2 between C/D) to absorb normal measurement and modelling uncertainty, including the broader uncertainty ranges typical of assessments with higher gap-filling rates. Sensitivity analysis on the regression test suite — that  $\pm 10\%$  (Individual Assurance) /  $\pm 20\%$  (Collective Assurance) input variations do not change rating categories outside the borderline band — is part of the QA evidence prepared for the validation engagement.

## PA-06.6 Scientific Basis for Rating Thresholds

### Climate Score: A-Rating Threshold (50% reduction target)

The 50% reduction target for the A rating is based on:

- **Eat-Lancet Commission:** Recommends reducing food system emissions from 8.5–13.7 Gt CO<sub>2</sub>eq/year to 5 Gt CO<sub>2</sub>eq/year (41–64% reduction).
- **IPCC AR6:** Reports food system emissions of ~17 Gt CO<sub>2</sub>eq/year (2018), requiring approximately 50% reduction to stay within planetary boundaries by 2050.
- **Springmann et al. (2018, Nature):** The “Flexitarian” diet scenario represents 50% of current emissions and is the minimum scenario keeping emissions within safe limits by 2050.

The bottom-up benchmark (3,894 g CO<sub>2</sub>eq/DFU; 2026-03 update: 3,728 g CO<sub>2</sub>eq/DFU) corresponds to ~2 tonnes CO<sub>2</sub>eq/person/year for food, consistent with the top-down estimate from Crippa et al. (2021, *Nature Food*).

### Water Footprint: AWARE Methodology

Water footprint is assessed using the AWARE (Available WAter REmaining) method:

- Blue water (irrigation) consumption quantified
- Regional water stress characterisation factors applied based on production location
- Scarcity-weighted water consumption expressed as litres per DFU

### Vita Score: WHO/GBD Risk Factor Framework

The Vita Score assesses nutritional quality using the WHO Global Burden of Disease (GBD) risk factor framework. Lower health points indicate better nutritional quality.

### Threshold Review Process

Rating thresholds in this pathway are reviewed:

- Annually during the stakeholder review process
- When the benchmark data is updated
- When significant scientific developments change the basis for thresholds (e.g. updated IPCC targets, new Eat-Lancet recommendations)

Any threshold change is a major change under EmpCo-12 and follows the consultation procedure defined in framework EmpCo-GOV-02.

## PA-07: Compliance Statement

This section confirms that the Eaternity EOS pathway complies with the framework-level requirements that apply to every pathway.

| Framework requirement                                                                                                     | Path-<br>way<br>com-<br>pliance<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCIA method — EF 3.1 declared (pathway-declared under the AR6-generation guardrail, scheme §1.4.3; Annex D reference set) | Impact_assessm<br>source;<br>model<br>char-<br>acter-<br>ized<br>Set-<br>ref-<br>er-<br>ence<br>time<br>pack-<br>age,<br>set<br>te-<br>grated<br>into<br>impact_assessm<br>and<br>matrix_calcula<br>Cli-<br>mate<br>change<br>re-<br>ported<br>as<br>fos-<br>sil /<br>bio-<br>genic /<br>LU-<br>LUC /<br>to-<br>tal<br>sub-<br>in-<br>di-<br>ca- |

|                                               |                                                                                                                                                                                              |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework requirement                         | Path-<br>play<br>dnce<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                |
|                                               | tors.<br>CH <sub>4</sub><br>fos-<br>sil/<br>bio-<br>genic<br>split<br>ap-<br>plied<br>au-<br>to-<br>mat-<br>i-<br>cally<br>based<br>on<br>bios-<br>phere<br>flow<br>type.                    |
| System boundary cradle-to-grave (Section 5.4) | Inventory_con<br>aggregation_g<br>life-<br>cy-<br>cle<br>stages<br>in-<br>cluded<br>for<br>every<br>prod-<br>uct<br>(agri-<br>cul-<br>tural<br>pro-<br>duc-<br>tion,<br>pro-<br>cess-<br>ing |

|                                                      |                                                                                                                                                              |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework requirement                                | Pathway<br>statement<br>reference                                                                                                                            |
|                                                      | & manufacturing, packaging, distribution, retail, consumer phase, end-of-life).                                                                              |
| Cut-off criteria per ISO 14044 / PEF (Section 5.4.2) | Mass<br>cut-off,<br>figure<br>energy<br>ratio,<br>emission;<br>environmental<br>importance<br>file<br>significance<br>plate<br>i-cance<br><1%;<br>cumulative |

| Framework requirement | Path-play<br>dnce<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <5%;<br>cut-<br>off<br>log<br>recorded<br>in<br>the<br>ev-<br>i-<br>dence<br>file.<br>Sys-<br>tem-<br>at-<br>i-<br>cally<br>ex-<br>cluded:<br>mi-<br>nor<br>ad-<br>min-<br>is-<br>tra-<br>tive<br>ac-<br>tiv-<br>i-<br>ties,<br>em-<br>ployee<br>com-<br>mut-<br>ing,<br>cap-<br>i-<br>tal<br>goods<br>de-<br>pre-<br>ci- |

|                                       |                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework requirement                 | Path-<br>play<br>dnce<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                   |
|                                       | a-<br>tion.                                                                                                                                                                                                                                                                                                                     |
| QA outcome requirements (Section 7.4) | Arrived<br>workugh<br>Sec-<br>pient<br>7e4;<br>view<br>(Pas-<br>sion<br>suite<br>Score:<br>Intts<br>di-<br>vid-<br>ual<br>As-<br>sur-<br>ance)<br>and<br>val-<br>i-<br>dated<br>au-<br>to-<br>mated<br>pipeline<br>(Ea-<br>ter-<br>nity<br>Gas-<br>tro:<br>Col-<br>lec-<br>tive<br>As-<br>sur-<br>ance;<br>en-<br>ter-<br>prise |

| Framework requirement | Path-<br>play<br>ance<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | pipelines<br>for<br>In-<br>di-<br>vid-<br>ual<br>As-<br>sur-<br>ance<br>planned).<br>Ac-<br>cu-<br>racy<br>tar-<br>gets:<br>$\pm 10\%$<br>In-<br>di-<br>vid-<br>ual /<br>$\pm 20\%$<br>Col-<br>lec-<br>tive,<br>as-<br>sessed<br>against<br>the<br>600-<br>item<br>re-<br>gres-<br>sion<br>suite<br>as<br>part<br>of<br>the<br>QA<br>ev-<br>i- |

| Framework requirement | Path-<br>play<br>dnce<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | dence<br>for<br>val-<br>i-<br>da-<br>tion.<br>Re-<br>pro-<br>ducibil-<br>ity:<br>iden-<br>ti-<br>cal<br>out-<br>puts<br>for<br>iden-<br>ti-<br>cal<br>in-<br>puts<br>(de-<br>sign<br>tar-<br>get,<br>PA-05.1).<br>Com-<br>plete-<br>ness,<br>trace-<br>abil-<br>ity,<br>and<br>out-<br>lier<br>de-<br>tec-<br>tion<br>per<br>the |

|                                       |                                                                                                                                                                                                                                                                                                              |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework requirement                 | Pathway<br>play<br>ance<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                              |
|                                       | frame-<br>work.                                                                                                                                                                                                                                                                                              |
| Evidence file structure (Section 6.5) | EOS<br>ev-<br>dence<br>file<br>schema;<br>divided<br>as<br>JSON<br>file-<br>spec-<br>ing<br>to<br>the<br>EOS<br>ev-<br>i-<br>dence<br>schema;<br>canon-<br>i-<br>cal<br>for-<br>mat<br>spec-<br>i-<br>fi-<br>ca-<br>tion<br>avail-<br>able<br>to<br>the<br>VVB<br>on<br>re-<br>quest.<br>Con-<br>fi-<br>den- |

|                                       |                                                                                                                                                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Framework requirement</b>          | <b>Path-<br/>play<br/>ance<br/>state-<br/>ment<br/>ta-<br/>tion<br/>ref-<br/>er-<br/>ence</b>                                                                                                                      |
|                                       | tial<br>com-<br>mer-<br>cial<br>in-<br>for-<br>ma-<br>tion<br>held<br>in<br>ev-<br>i-<br>dence<br>files<br>but<br>not<br>pub-<br>lished<br>in<br>the<br>pub-<br>lic<br>ver-<br>i-<br>fi-<br>ca-<br>tion<br>record. |
| <b>Change management (Section 12)</b> | <b>Three-<br/>pic-12;<br/>EOS<br/>EOS<br/>se-<br/>lease<br/>process;<br/>change<br/>log<br/>ple-<br/>mented<br/>in<br/>EOS<br/>re-</b>                                                                             |

| Framework requirement | Pathway<br>play<br>dnce<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | lease<br>process.<br>Change<br>log<br>at<br><a href="#">empco.eaternity.changelog.html</a><br>Re-<br>gres-<br>sion<br>suite<br>(PA-07.1)<br>ex-<br>e-<br>cuted<br>against<br>every<br>EOS<br>re-<br>lease.<br>Ma-<br>te-<br>ri-<br>al-<br>ity<br>analy-<br>sis<br>recorded<br>for<br>mi-<br>nor<br>and<br>ma-<br>jor<br>changes.<br>Ma-<br>jor<br>changes<br>re-<br>quire<br>fo- |

|                                                  |                                                                                                                                                                                        |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Framework requirement</b>                     | <b>Path-</b><br><b>play</b><br><b>dnce</b><br><b>state-</b><br><b>ment</b><br><b>ta-</b><br><b>tion</b><br><b>ref-</b><br><b>er-</b><br><b>ence</b>                                    |
|                                                  | cused<br>re-<br>val-<br>i-<br>da-<br>tion<br>by<br>the<br>VVB<br>be-<br>fore<br>de-<br>ploy-<br>ment<br>(Cer-<br>ti-<br>fi-<br>ca-<br>tion<br>Com-<br>mit-<br>tee<br>in-<br>formed).   |
| <b>Functional-unit consistency</b> (Section 4.3) | <b>ally_food_uni</b><br><b>com-</b><br><b>par-</b><br><b>dence</b><br><b>file</b><br><b>claims</b><br><b>plan</b><br>a<br>port-<br>fo-<br>lio<br>use<br>the<br>DFU<br>(or<br>an<br>ex- |

|                       |                                                                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework requirement | Pathway<br>play<br>ance<br>state-<br>ment<br>ta-<br>tion<br>ref-<br>er-<br>ence                                                                                                                                      |
|                       | plic-<br>itly<br>de-<br>clared<br>al-<br>ter-<br>na-<br>tive);<br>en-<br>forced<br>in<br>the<br>cal-<br>cu-<br>la-<br>tion<br>pipeline;<br>de-<br>clared<br>per<br>claim<br>in<br>the<br>ev-<br>i-<br>dence<br>file. |

PA-07.1 Regression Test Suite

The Eaternity pathway maintains a regression test suite of **600 items** under framework Section 12.5:

- **Suite size:** 600 items
- **Input cases:** 250 caterer recipes (names + quantities only, Collective Assurance), 200 label/retail products (back-of-package data, Individual Assurance via validated pipeline), 150 full-specification products (complete primary data, Individual Assurance via questionnaire)
- **Generation method:** Deterministic, seeded (seed=42), versioned, validated against the EOS production API at [api.eaternity.ch](https://api.eaternity.ch)
- **VVB access:** The VVB can re-run the suite via the regression-suite CLI (`regression-suite` Python package) against the EOS API using a VVB-issued token; results are published with each EOS release in the change log

## PA-07.2 Open Systemic Validation and Minimal Per-Claim Verification

This pathway is offered as an **open, transparent pathway**: the EOS calculation engine, its emission models, and the underlying inventory layers are published as open source (see the eos-lci tributaries, e.g. [lci-salca](#), and the public portal at [empco.eaternity.org](#)), so that the systemic, up-front Layer-2 review of the methodology described in framework §1.2.1 can be conducted directly against the source, not against a black box.

The intent of this design is to make per-claim verification minimal and therefore scalable:

- **Reviewed once, up front.** The engine, models, gap-filling logic, functional unit, and rating-shape derivation are reviewed as a system before any claim is certified, against the framework's Layer-2 criteria. Because the source and inventory are open, the reviewer can inspect and re-derive any value rather than relying on a provider attestation.
- **Reproducible by design.** Given identical inputs, EOS version, and EDB version, the engine is designed to produce identical outputs (PA-05.1 determinism requirement; formally verified in the QA evidence for validation), and the VVB can independently re-run the full 600-item regression suite (PA-07.1) against the public API. The systemic review therefore covers the *behaviour* of the engine across the catalogue, not a single sample.
- **Per-claim verification reduces to confidential primary-data provision.** Once the engine is systemically validated, verifying an individual passed claim does not require re-checking the calculation logic. It reduces to the trader or brand *confidentially providing the primary input data* that was run through the already-validated engine, which the VVB traces to the published output (the data-flow check in §1.2.1). Commercially sensitive inputs (recipes, supplier identities) stay confidential in the evidence file and are not published in the public verification record (PA-07, evidence-file row).

This is the efficiency mechanism that lets the pathway scale to large product portfolios and recipe-level catalogues without the certification body re-investigating the methodology on every claim. It is offered as the Eaternity pathway's operating model; it does not require any other provider to open their methodology, and it does not change the framework-level requirements, which apply to every pathway by reference.

## PA-07.3 QA-Outcome Evidence Map (EmpCo-07 §7.4)

| Outcome                | Mechanism                                                                                                                     | Evidence artefact                                | VVB inspection route                          |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------|
| <b>Accuracy</b>        | Recalculation checks against reference values; oracle parity monitoring                                                       | Regression run reports; oracle-parity export     | Re-run suite via CLI; compare shipped reports |
| <b>Reproducibility</b> | Determinism design target: identical input + versions → identical output; formally verified in the QA evidence for validation | Versioned releases; seeded suite generation      | Re-run any assessment with pinned versions    |
| <b>Completeness</b>    | Input-case envelope with per-case minimum item counts                                                                         | Suite case definitions (PA-07.1); coverage stats | Review case definitions vs. live claim mix    |
| <b>Traceability</b>    | Evidence file per claim (inputs, versions, factors, output)                                                                   | JSON evidence files; public verification records | Trace sampled claims end-to-end               |

| Outcome                  | Mechanism                                                                          | Evidence artefact            | VVB inspection route                    |
|--------------------------|------------------------------------------------------------------------------------|------------------------------|-----------------------------------------|
| <b>Outlier detection</b> | Automated flagging at Collective Assurance; analyst review at Individual Assurance | Flag logs; QA review records | Inspect flag logs for the sample period |

## PA-08: Surveillance Sample Access

The VVB draws its annual sample per the following procedure (scheme minima and tolerances per EmpCo-11):

1. **Sampling frame:** the public verification records (Section 1.5) plus the provider's assessment log for the verification period; the trader register (PA-10.3) identifies the trader population.
2. **Sample drawing:** the VVB selects claim IDs directly (random + risk-based per its documented sampling procedure); the provider has no influence on selection.
3. **Evidence delivery:** for each selected ID the provider returns the full evidence file within **5 business days**.
4. **Independent re-calculation:** the VVB re-runs selected assessments via the `regression-suite` CLI against the production API using a VVB-issued read-only token, versions pinned to the claim's evidence file; acceptable variance  $\pm 5\%$ .
5. **Claim-wording check:** for each sampled claim the VVB receives the as-displayed communication (menu extract, pack artwork, screenshot), supplied by the trader under its duty to furnish information (Annex G Section G.2.3a), routed via the provider.
6. **On-site:** system-level activities at the provider's Zurich office; trader-site visits only where the VVB's risk assessment requires.

## PA-09: Declared Choices

Single-page summary of the Eaternity EOS pathway's declarations on the EmpCo variation surface.

| Dimension                           | Framework requirement                                                                                               | Pathway choice                                                                                                                                                                                                                                                                                              |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System boundary</b>              | Cradle-to-grave (uniformly mandatory, §1.4.1)                                                                       | <b>Cradle-to-grave</b> (all seven life-cycle stages — see PA-07)                                                                                                                                                                                                                                            |
| <b>LCIA method (climate change)</b> | Pathway-declared under the AR6-generation guardrail (§1.4.3, since 2026-08-04; Rulebook: Layer-2-reviewed, §6.3 Q2) | <b>EF 3.1 climate change</b> , with fossil / biogenic / LULUC / total sub-indicators (see PA-05.2 and PA-07)                                                                                                                                                                                                |
| <b>Rating system</b>                | A–E letter grades (uniformly mandatory, §1.4.1)                                                                     | <b>A–E letter grades</b> across five indicators (Climate, Water, Vita, Animal Welfare, Rainforest); simplified A/B/E for Animal Welfare and Rainforest (see PA-06)                                                                                                                                          |
| <b>Functional unit</b>              | Daily Food Unit (DFU) — uniformly mandatory (§1.4.1)                                                                | <b>Daily Food Unit (DFU)</b> — pathway implementation per PA-04; per kg and per serving informational alternatives are also surfaced in customer-facing reports                                                                                                                                             |
| <b>Climate-impact claim</b>         | In EmpCo scope for Sept 2026 (§1.4.3)                                                                               | Supported (mandatory minimum)                                                                                                                                                                                                                                                                               |
| <b>Other claim types</b>            | Operationally available; not in EmpCo-certified scope (§1.4.3)                                                      | Water, Nutrition (Vita), Animal Welfare, Deforestation (Rainforest) — operationally supported but not certified for market use under EmpCo until ESFC member approval                                                                                                                                       |
| <b>LCI database</b>                 | Provider-declared (§1.4.4)                                                                                          | <b>Eaternity Database (EDB)</b> (current published snapshot 2026.1), background: <b>open UVEK/BAFU-based LCI database</b> on the <b>BAFU:2026</b> datasets (LCI Workbench, public data basis) — production deployment ahead of the validation engagement, see the PA-04.1 migration-status note (see PA-04) |
| <b>Calculation engine</b>           | Provider-declared (§1.4.4)                                                                                          | <b>Environmental Operating System (EOS)</b> — graph-based DAG of 27 gap-filling modules; semantic-versioned, version pinned per assessment in the evidence file; in-engine                                                                                                                                  |

| Dimension          | Framework requirement      | Pathway choice                                                                                                                                                                                      |
|--------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                            | matrix-based LCA with independent Brightway recompute (see PA-05.1, PA-05.3)                                                                                                                        |
| Gap-filling logic  | Provider-declared (§1.4.4) | 27 modular gap-filling modules; calibrated against PEFCRs and published LCA data (see PA-05.2)                                                                                                      |
| QA delivery method | Provider-declared (§1.4.4) | <b>Hybrid:</b> expert review (Eaternity Score: Individual Assurance) + validated automated pipeline (Eaternity Gastro: Collective Assurance; enterprise pipelines for Individual Assurance planned) |

**Declaration independence (guardrails-ready).** The LCIA method is pathway-declared under the AR6-generation guardrail since 2026-08-04 (EF 3.1 leg of the floor-to-guardrails proposal adopted); the DFU and the A–E rating shape remain uniformly mandatory floor items (Section 1.4.1) **and** this pathway’s own declared choices. Should the remaining legs of the proposal be adopted, all declarations stand unchanged as the pathway’s choices under the guardrails: the LCIA method is IPCC-AR6-generation characterisation (EF 3.1) with fossil / biogenic / LULUC sub-indicators, published with its version via the label’s digital access link; the DFU is disclosed on-label with comparability class DFU (PA-03); the rating thresholds, benchmark, derivation rationale and update process are published per PA-06, with the **A threshold maintained at  $\geq 50\%$  below the declared benchmark** (defined-term qualification, PA-06.2). No rating, threshold, or customer-terms change results from the floor decision in either direction.

Changes to declared choices follow the change-management process in framework EmpCo-12. Adding, removing, or sunsetting an option in the functional-unit menu, or any change to a §1.4.1 mandatory item, is a **major scheme change** requiring stakeholder consultation per framework EmpCo-GOV-02.

## PA-10: Trader Binding Implementation

This section documents how the Eaternity EOS pathway implements the trader-binding mechanism defined in scheme §1.2.2 and Annex G.

### PA-10.1 Customer Terms Implementation

*Status (2026-07-14) — implemented:* the customer terms in force since **14 July 2026** (version of 13 July 2026, published at [eaternity.org/legal/terms](https://eaternity.org/legal/terms) with a standalone German version at [eaternity.org/de/rechtliches/nutzungsbedingungen](https://eaternity.org/de/rechtliches/nutzungsbedingungen)) incorporate the **EmpCo module**: a preamble plus clauses 10.1–10.7, where **clause 10.6** carries the on-pack surface module per Annex G Section G.1 (pre-market notification of rating-relevant changes; print-run stop, correction period and sell-through window on a rating change). The separate Schedule E was dissolved into 10.6 on 2026-08-18 — after the decoupling, its remaining clauses merely restated 10.2/10.3/10.4 and the Section-1 mark licence. The module implements the Annex G substance in condensed form without numeric response deadlines (“promptly / without undue delay / reasonable period”) — permitted by Annex G (wording at the provider’s discretion) and subject to VVB review at the initial validation engagement. Merge record: eaternity website MR !50, merged 2026-07-14.

Clause mapping (implemented): G.2.1 → 10.1 (scope and acceptance by use); G.2.2 → 10.2 (communication); G.2.3 + G.2.3a + G.2.5 → 10.3 (information and cooperation, including the data-minimising routing of G.2.3a); G.2.4 → 10.4 (register and status confirmation); G.2.6 → 10.5 (suspension, register status, reinstatement); G.2.7 → 10.6 (updates); G.2.8 → preamble (no direct VVB/Committee relationship; module precedence).

### PA-10.2 Customer Notification Record

For the transition from the terms of 9 March 2020 to the terms of 13 July 2026 (in force 14 July 2026):

- **New customers:** the current terms (including the EmpCo module) are part of the standard onboarding at [eaternity.org/sign-up](https://eaternity.org/sign-up) as of 14 July 2026; the customer accepts at sign-up
- **Existing customers — mechanism (most customers interact via API/POS integrations, not a login):** primary binding is the **e-mail notification + 20-day passive window** (the 2020 terms’ change mechanism supports this) together with **clause 10.1 use-based acceptance** (consumer-facing use of ratings constitutes acceptance — continuous, login-independent). Supplementary active evidence: a **reply-based confirmation** invited in the notification e-mail (logged), and — for the login-using minority — an in-product notice. **Customers ordering per-product assessment confirm that order expressly and individually** (order or logged acceptance) in the separate follow-up — an ordinary service order, not a terms clause. On-pack claims as such ride on clause 10.1 use-based acceptance plus the on-pack duties of clause 10.6, which apply to the packaging/shelf surface irrespective of assurance level
- **Notification:** email to all active customers plus in-product banner — **dispatch pending**; this record completes (date, mechanism, reach) upon dispatch
- **Acceptance confirmation log:** per-customer acceptance records in Eaternity’s CRM (reply confirmations; in-product confirmations where given; use-based binding evidence from claim communication); reported to the VVB at the initial validation engagement

## PA-10.3 Trader Register and Status Confirmation

| Field                                      | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Population rule</b>                     | Licence-coupled: one register entry per customer holding an active Eaternity licence (paid or free of charge — the licence includes the Score mark licence, i.e. the right to communicate ratings). Licence status drives register status: active licence → <b>active</b> ; suspension under the customer terms (clause 10.5) overrides to <b>suspended</b> ; licence end → <b>terminated</b> . Deliberately over-inclusive: customers who hold a licence but do not (yet) communicate are listed as backed; a communicating customer without an entry cannot occur. |
| <b>Register source and cadence</b>         | Nightly at 02:00 UTC; automated from Eaternity's CRM via the register-export job (Ed25519-signed JSON; exact figures delivered to the VVB and scheme bodies on request, not published). <b>Operational since 2026-08-07</b> (nightly export + public status page live; suspension/termination SOP propagation per the row below).                                                                                                                                                                                                                                    |
| <b>Aggregate statistics URL</b>            | <a href="https://empco.eaternity.org/traders/eaternity/">empco.eaternity.org/traders/eaternity/</a> — status register: exact suspended / terminated counts and the population rule; no trader list and no population figures (the size of the active population is commercially confidential, disclosed to the VVB under engagement confidentiality)                                                                                                                                                                                                                 |
| <b>Status-confirmation contact</b>         | Portal verification contact (defaults to Eaternity compliance team, escalates to ESFC compliance); answered without undue delay                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Public entries</b>                      | Traders under Individual Assurance individually listed (required per Section 1.6.2); traders under Collective Assurance listed only on opt-in (consent-based, revocable)                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Suspension and termination handling</b> | Internal status changes propagate to the register within one nightly refresh cycle ( $\leq 24$ hours). Where a VVB-mandated suspension requires faster propagation, an out-of-band manual update path is documented in Eaternity's internal SOP-EmpCo-04.                                                                                                                                                                                                                                                                                                            |

## PA-10.4 Enforcement Mechanism

- **Suspension authority:** terms of 13 July 2026, clause 10.5 (Suspension and reinstatement): on breach of Section 10, Eaternity may suspend the use of ratings and labels and records the changed status in the register; reinstatement without delay once the ground is remedied
- **Suspension trigger conditions:** breach of Section 10 — including communication outside the claim rules (clause 10.2), failure to substantiate (clause 10.3), claim use without an active assessment, deliberate falsification of submitted data; VVB finding of trader-attributable non-conformity; unresolved complaint after the timeline in EmpCo Section 10.3.2

- **Termination authority:** base terms, Termination section (termination without notice for material breach), in conjunction with clause 10.5; on termination, outstanding claims are withdrawn per clause 10.5 and scheme Section 8.5.2
- **Termination trigger conditions:** repeated suspension (3 within 24 months); deliberate misuse; refusal to cooperate with complaint investigation or VVB sampling; insolvency
- **Trader appeal route:** Eaternity internal review (10 business days), then ESFC compliance review (10 business days), then VVB review per scheme §10.4
- **Internal procedure documentation:** Eaternity SOP-EmpCo-04 “Trader Suspension and Termination Procedure” (internal document; available to VVB on request at audit)

## PA-10.5 Annual Surveillance Submission

Eaternity submits to the VVB at each annual surveillance:

- AGB version log with effective dates and material changes since the last surveillance
- Trader complaint summary: aggregate count, classification (minor / major / critical), resolution outcomes, time-to-resolution distribution
- Register operational record: total bound traders, new traders this period, terminated traders this period, suspended traders, average days-to-suspension after non-conformity finding
- Specific enforcement actions: list of suspensions and terminations executed during the surveillance period, by trigger reason and outcome

## Sign-off

| Role                                               | Name | Signature | Date |
|----------------------------------------------------|------|-----------|------|
| Provider — Chief Scientist (methodology integrity) |      |           |      |
| Provider — Head of Engineering (EOS operation)     |      |           |      |
| Provider — Head of Quality (QA framework)          |      |           |      |
| Provider — Managing Director                       |      |           |      |
| VVB — lead auditor                                 |      |           |      |
| VVB — certification decision                       |      |           |      |

## Appendix A — Pathway Document History

| Version     | Date       | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.6.8-draft | 2026-08-18 | Editorial      | <p>On-<br/>i-<br/>cal<br/>por-<br/>tal<br/>URLs<br/>moved<br/>to<br/>the<br/>provider-<br/>owned<br/>do-<br/>main<br/>empco.eaternity.org<br/>(Git-<br/>Lab<br/>Pages<br/>cus-<br/>tom<br/>do-<br/>main,<br/>auto-<br/>TLS);<br/>the<br/>pre-<br/>vi-<br/>ous<br/>em-<br/>pco-<br/>aeceeb.gitlab.io<br/>URLs<br/>re-<br/>main<br/>per-<br/>ma-<br/>nently<br/>served<br/>(URL-<br/>sta-<br/>bil-<br/>ity<br/>com-<br/>mit-<br/>ment).<br/>Por-</p> |

| Version     | Date       | Classification | Reference<br>mary                                                                                                                                                                                                                                 |
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|             |            |                | tal<br>re-<br>named<br>to<br>“Ea-<br>ter-<br>nity<br>EOS<br>Path-<br>way<br>Dis-<br>clo-<br>sures”<br>—<br>provider-<br>dis-<br>clo-<br>sure<br>iden-<br>tity;<br>the<br>scheme-<br>level<br>record<br>lives<br>on<br>the<br>ESFC<br>por-<br>tal. |
| 1.6.7-draft | 2026-08-18 | Correction     | <del>Chain</del><br>tomer<br>terms<br>sim-<br>pli-<br>fied<br>again<br>the<br>same<br>day:<br>An-<br>hang/<br>Sched-<br>ule<br>E<br>dis-<br>solved<br>into                                                                                        |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------|------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |      |                | <p>clause<br/>10.6<br/>(only<br/>the<br/>two<br/>gen-<br/>uinely<br/>pack-<br/>ag-<br/>ing-<br/>spe-<br/>cific<br/>du-<br/>ties<br/>sur-<br/>vive<br/>—<br/>pre-<br/>mar-<br/>ket<br/>change<br/>no-<br/>ti-<br/>fi-<br/>ca-<br/>tion<br/>and<br/>print-<br/>run<br/>stop/<br/>cor-<br/>rec-<br/>tion/<br/>sell-<br/>through;<br/>the<br/>rest<br/>re-<br/>stated<br/>10.2/10.3/10.4<br/>and<br/>the<br/>Sec-<br/>tion-1<br/>mark<br/>li-<br/>cence).<br/>The</p> |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|         |      |                | <p>terms<br/>now<br/>carry<br/>no<br/>as-<br/>sur-<br/>ance-<br/>level<br/>vo-<br/>cab-<br/>u-<br/>lary<br/>at<br/>all:<br/>a<br/>deeper<br/>per-<br/>prod-<br/>uct<br/>as-<br/>sess-<br/>ment<br/>is<br/>an<br/>or-<br/>der-<br/>able<br/>ser-<br/>vice,<br/>and<br/>the<br/>scheme<br/>con-<br/>cor-<br/>dance<br/>lives<br/>here<br/>in<br/>PA-10<br/>—<br/>so<br/>fu-<br/>ture<br/>scheme<br/>re-<br/>names<br/>never<br/>touch</p> |

| Version     | Date       | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                      |
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|             |            |                | the<br>terms.                                                                                                                                                                                                                                                                                                                                                                          |
| 1.6.6-draft | 2026-08-18 | Correction     | <del>Claim</del><br>to-mer-<br>terms<br>re-<br>vi-<br>sion<br>synced<br>into<br>PA-10:<br>An-<br>hang/<br>Sched-<br>ule<br>E<br>no<br>longer<br>makes<br>En-<br>hanced<br>As-<br>sur-<br>ance<br>a<br>pre-<br>con-<br>di-<br>tion<br>for<br>on-<br>pack/<br>shelf<br>claims<br>—<br>the<br>sur-<br>face<br>covenants<br>ap-<br>ply<br>at<br>any<br>as-<br>sur-<br>ance<br>level<br>and |

| Version     | Date       | Classification         | Reference<br>mary                                                                                                                                                                                                                                                                                         |
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|             |            |                        | En-<br>hanced<br>is<br>an<br>ex-<br>pressly<br>or-<br>dered<br>op-<br>tion<br>(scheme-<br>side<br>de-<br>cou-<br>pling<br>in<br>Em-<br>pCo<br>0.5.8-<br>draft-<br>vv<br>§1.2.2/<br>§6.2/<br>§8.2.2/<br>An-<br>nex<br>G).<br>Frame-<br>work/<br>date<br>front-<br>mat-<br>ter<br>stamps<br>re-<br>freshed. |
| 1.6.5-draft | 2026-08-07 | Sequencing declaration | Re-<br>baselin-<br>ing<br>de-<br>ci-<br>sion:<br>the<br>UVEK/<br>BAFU<br>back-<br>ground<br>de-                                                                                                                                                                                                           |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                                             |
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|         |      |                | <p>ployment,<br/>the<br/>an-<br/>nounced<br/>DFU<br/>re-<br/>vi-<br/>sion<br/>(VpF)<br/>and<br/>the<br/>EF<br/>3.1/<br/>AR6<br/>bench-<br/>mark<br/>re-<br/>cal-<br/>cu-<br/>la-<br/>tion<br/>are<br/>de-<br/>ployed<br/>in<br/>ONE<br/>re-<br/>baselin-<br/>ing<br/>step<br/>ahead<br/>of<br/>the<br/>ini-<br/>tial<br/>val-<br/>i-<br/>da-<br/>tion<br/>en-<br/>gage-<br/>ment<br/>—<br/>the<br/>en-<br/>gage-<br/>ment</p> |

| Version     | Date       | Classification | Reference<br>mary                                                                                                                                                                                                     |
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|             |            |                | val-<br>i-<br>dates<br>the<br>re-<br>vised<br>stack<br>as<br>op-<br>er-<br>ated.<br>PA-03/<br>PA-04/<br>thresh-<br>old<br>notes<br>up-<br>dated<br>ac-<br>cord-<br>ingly.                                             |
| 1.6.4-draft | 2026-08-07 | Correction     | <del>Main</del><br>lic<br>reg-<br>is-<br>ter<br>re-<br>de-<br>fined<br>as<br>a<br>sta-<br>tus<br>reg-<br>is-<br>ter:<br>ex-<br>act<br>sus-<br>pended/<br>ter-<br>mi-<br>nated<br>counts<br>pub-<br>lic;<br>pop-<br>u- |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                 |
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|         |      |                | la-<br>tion<br>size<br>and<br>trader<br>iden-<br>ti-<br>ties<br>com-<br>mer-<br>cially<br>con-<br>fi-<br>den-<br>tial<br>(dis-<br>closed<br>to<br>the<br>VVB<br>un-<br>der<br>en-<br>gage-<br>ment<br>con-<br>fi-<br>den-<br>tial-<br>ity).<br>Reg-<br>is-<br>ter<br>ex-<br>port<br>+<br>pub-<br>lic<br>page<br>op-<br>er-<br>a-<br>tional<br>(nightly<br>signed<br>ex-<br>port). |

| Version     | Date       | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                          |
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| 1.6.3-draft | 2026-08-06 | Correction     | <del>Dein</del><br>de-<br>c-<br>la-<br>ra-<br>tion<br>re-<br>stated<br>as-<br>op-<br>er-<br>ated<br>(V0:<br>dry<br>weight<br>=<br>mass<br>—<br>wa-<br>ter /600<br>g;<br>rest<br>en-<br>ergy /6,000<br>kJ)<br>with<br>the<br>an-<br>nounced<br>VpF<br>re-<br>vi-<br>sion<br>named<br>con-<br>cretely<br>(WHO/<br>FAO<br>2,000-<br>kcal/60-<br>kg<br>frame;<br>5,076<br>kJ<br>rest<br>en-<br>ergy;<br>macro- |

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|             |            |                    | stripped<br>dry<br>mat-<br>ter /325<br>g;<br>adop-<br>tion<br>=<br>ma-<br>jor<br>change<br>with<br>re-<br>baselin-<br>ing).<br>Cov-<br>er-<br>age<br>cor-<br>rected<br>to<br>the<br>ver-<br>i-<br>fi-<br>able<br>snap-<br>shot<br>count<br>(≈2,330<br>prod-<br>ucts);<br>un-<br>ver-<br>i-<br>fied<br>“~950 /<br>~565,000”<br>fig-<br>ures<br>re-<br>moved. |
| 1.6.2-draft | 2026-08-06 | Honesty correction | Provider<br>re-<br>view<br>of<br>2026-08-06:<br>ev-                                                                                                                                                                                                                                                                                                         |

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|         |      |                | i-<br>dence-<br>file<br>gen-<br>er-<br>a-<br>tion<br>re-<br>clas-<br>si-<br>fied<br>from<br>op-<br>er-<br>at-<br>ing<br>claim<br>to<br>a<br>build<br>item<br>com-<br>pleted<br>ahead<br>of<br>the<br>val-<br>i-<br>da-<br>tion<br>en-<br>gage-<br>ment<br>(schema<br>spec-<br>i-<br>fied<br>to-<br>day);<br>re-<br>tail-<br>ERP<br>en-<br>ter-<br>prise<br>in-<br>te-<br>gra- |

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|         |      |                | tion<br>marked<br>planned<br>(op-<br>er-<br>a-<br>tional<br>to-<br>day:<br>ques-<br>tion-<br>naire<br>in-<br>take<br>for<br>In-<br>di-<br>vid-<br>ual,<br>ERP/<br>API<br>in-<br>te-<br>gra-<br>tions<br>on<br>the<br>Col-<br>lec-<br>tive<br>side);<br>de-<br>ter-<br>min-<br>ism<br>and<br>±10/<br>±20<br>ac-<br>cu-<br>racy<br>re-<br>framed<br>as<br>de-<br>sign<br>tar-<br>gets |

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|         |      |                | <p>whose<br/>for-<br/>mal<br/>ver-<br/>i-<br/>fi-<br/>ca-<br/>tion<br/>is<br/>part<br/>of<br/>the<br/>QA<br/>ev-<br/>i-<br/>dence<br/>for<br/>val-<br/>i-<br/>da-<br/>tion;<br/>Col-<br/>lec-<br/>tive<br/>trader<br/>struc-<br/>ture<br/>clar-<br/>i-<br/>fied<br/>(the<br/>li-<br/>cence-<br/>hold-<br/>ing<br/>le-<br/>gal<br/>en-<br/>tity<br/>is<br/>the<br/>trader;<br/>kitchens<br/>are<br/>count-<br/>ing<br/>units<br/>—</p> |

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|             |            |                | fig-<br>ures<br>in<br>the<br>con-<br>fi-<br>den-<br>tial<br>reg-<br>is-<br>tra-<br>tion<br>and<br>scope<br>in-<br>put).                                                                                                                                                                                              |
| 1.6.1-draft | 2026-08-05 | Correction     | <del>Chain</del><br>tact<br>ad-<br>dresses<br>cor-<br>rected<br>(tech-<br>sup-<br>port@eaternity.ch,<br>mail@eaternity.org,<br>com-<br>pli-<br>ance@eaternity.ch).<br>DFU<br>ref-<br>er-<br>ence<br>ba-<br>sis<br>cor-<br>rected:<br>di-<br>vi-<br>sors<br>are<br>one-<br>day<br>ref-<br>er-<br>ence<br>tar-<br>gets |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                           |
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|         |      |                | (~2,200<br>kcal/<br>day;<br>6,000<br>kJ<br>rest-<br>en-<br>ergy<br>canon-<br>i-<br>cal<br>con-<br>stant)<br>—<br>er-<br>ro-<br>neous<br>“1/3<br>of<br>daily<br>in-<br>take”<br>tar-<br>get<br>list<br>re-<br>moved;<br>canon-<br>i-<br>cal<br>open-<br>source<br>im-<br>ple-<br>men-<br>ta-<br>tion<br>lci-<br>dfu<br>ref-<br>er-<br>enced.<br>EDB<br>snap-<br>shot<br>iden-<br>ti-<br>fied |

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|         |      |                | <p>by<br/>its<br/>pub-<br/>lished<br/>changelog<br/>iden-<br/>tity<br/>(2026.1<br/>—<br/>Al-<br/>pha,<br/>UVEK/<br/>BAFU<br/>Back-<br/>ground)<br/>in-<br/>stead<br/>of<br/>a<br/>stale<br/>date.<br/>PA-04.1<br/>re-<br/>duced<br/>to<br/>prin-<br/>ci-<br/>pal<br/>ba-<br/>sis<br/>+<br/>com-<br/>plete-<br/>ness<br/>pointer.<br/>Open-<br/>meth-<br/>ods<br/>state-<br/>ment<br/>added.<br/>Typst<br/>ren-<br/>der-<br/>ing<br/>rec-<br/>on-<br/>ciled</p> |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                               |
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|         |      |                | to<br>the<br>main-<br>tained<br>mark-<br>down<br>source:<br>stale<br>front-<br>mat-<br>ter<br>(frame-<br>work<br>stamps,<br>dates),<br>PA-01<br>con-<br>tact<br>ad-<br>dresses<br>(es-<br>caped<br>legacy<br>forms<br>the<br>ear-<br>lier<br>fix<br>missed),<br>an<br>out-<br>dated<br>cer-<br>ti-<br>fi-<br>ca-<br>tion-<br>body<br>en-<br>gage-<br>ment<br>men-<br>tion,<br>and<br>re-<br>main-<br>ing<br>En- |

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|             |            |                | hanced/<br>Stan-<br>dard<br>vo-<br>cab-<br>u-<br>lary<br>cor-<br>rected<br>in<br>the<br>ren-<br>der-<br>ing.                                                                                                                                                                              |
| 1.6.0-draft | 2026-08-04 | Minor          | <del>PAI-09</del><br>LCIA<br>row<br>re-<br>framed<br>as<br>path-<br>way-<br>de-<br>clared<br>un-<br>der<br>the<br>AR6-<br>gen-<br>er-<br>a-<br>tion<br>guardrail<br>(scheme<br>§1.4.3);<br>de-<br>c-<br>la-<br>ra-<br>tion<br>un-<br>changed<br>(EF<br>3.1).<br>Vo-<br>cab-<br>u-<br>lary |

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|             |            |                | aligned<br>to<br>the<br>Rule-<br>book:<br>In-<br>di-<br>vid-<br>ual /<br>Col-<br>lec-<br>tive<br>As-<br>sur-<br>ance<br>re-<br>place<br>En-<br>hanced /<br>Stan-<br>dard<br>(cus-<br>tomer-<br>terms<br>sched-<br>ule<br>names<br>un-<br>changed<br>un-<br>til<br>the<br>next<br>terms<br>re-<br>vi-<br>sion;<br>map-<br>ping<br>in<br>PA-02.4). |
| 1.5.1-draft | 2026-07-28 | Correction     | <del>Main</del><br>ver-<br>i-<br>fi-<br>able<br>ver-<br>sion                                                                                                                                                                                                                                                                                     |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|         |      |                | <p>pins<br/>re-<br/>moved;<br/>Bright-<br/>way<br/>role<br/>stated<br/>ac-<br/>cu-<br/>rately:<br/>EDB<br/>ver-<br/>sion<br/>=<br/>cur-<br/>rent<br/>pub-<br/>lished<br/>snap-<br/>shot<br/>(2026.1),<br/>en-<br/>gine<br/>pin<br/>“v4.2.1”<br/>re-<br/>placed<br/>by<br/>the<br/>se-<br/>man-<br/>tic-<br/>ver-<br/>sion-<br/>ing<br/>+<br/>ev-<br/>i-<br/>dence-<br/>file<br/>pin-<br/>ning<br/>rule,<br/>PA-05.3<br/>rewrit-<br/>ten<br/>(LCIA<br/>in-</p> |

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|-------------|------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |            |                      | en-<br>gine;<br>Bright-<br>way<br>=<br>in-<br>ven-<br>tory<br>im-<br>port<br>+<br>in-<br>de-<br>pen-<br>dent<br>re-<br>com-<br>pute).<br>Por-<br>tal<br>PA-09<br>page<br>synced.                                                        |
| 1.5.0-draft | 2026-07-15 | Background corrected | PA-04/<br>PA-09: provider/eaternity<br>er-<br>ro-<br>neous<br>“Ecoin-<br>vent<br>3.10 /<br>Agribal-<br>yse<br>3.1”<br>back-<br>ground<br>claim<br>re-<br>placed<br>by<br>the<br>open<br>UVEK/<br>BAFU-<br>based<br>LCI<br>data-<br>base |

| Version     | Date       | Classification   | Reference<br>mary                                                                                                                                       |
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|             |            |                  | (LCI Work-bench, public data ba-sis); as-op-er-ated mi-gra-tion-sta-tus note added (pro-duc-tion de-ploy-ment ahead of the val-i-da-tion en-gage-ment). |
| 1.4.0-draft | 2026-07-14 | Guardrails-ready | PAI-03+ provider/eaternity la-bel-dis-clo-sure + com-pa-ra-bil-ity class                                                                                |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                        |
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|         |      |                | (DFU);<br>PA-06.2<br>de-<br>fined-<br>term<br>qual-<br>i-<br>fi-<br>ca-<br>tion<br>(A<br>=<br>50%<br>be-<br>low<br>de-<br>clared<br>bench-<br>mark,<br>stand-<br>ing<br>com-<br>mit-<br>ment);<br>PA-09<br>de-<br>c-<br>la-<br>ra-<br>tion-<br>in-<br>de-<br>pen-<br>dence<br>note<br>(EF<br>3.1 /<br>DFU /<br>A-<br>E<br>stand<br>as<br>path-<br>way<br>choices<br>re-<br>gard-<br>less |

| Version     | Date       | Classification   | Reference<br>mary                                                                                                                                                                                                                                                                                   |
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|             |            |                  | of<br>the<br>floor<br>de-<br>ci-<br>sion).                                                                                                                                                                                                                                                          |
| 1.3.1-draft | 2026-07-14 | Applicant status | <del>Main</del> + provider/eaternity<br>clared<br>as<br>ap-<br>pli-<br>cant<br>path-<br>way<br>and<br>moved<br>to<br>the<br>canon-<br>i-<br>cal<br>path<br>on<br>main<br>(no<br>longer<br>framed<br>as<br>an<br>il-<br>lus-<br>tra-<br>tive<br>ex-<br>am-<br>ple);<br>sta-<br>tus<br>line<br>added. |
| 1.3.0-draft | 2026-07-14 | Terms shipped    | <del>Provider/eaternity</del><br>up-<br>dated<br>to<br>the<br>im-<br>ple-<br>mented                                                                                                                                                                                                                 |

| Version | Date | Classification | Reference<br>mary                                                                                                                                                                                                                                                                                                                                                                     |
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|         |      |                | state<br>(Em-<br>pCo<br>mod-<br>ule<br>live<br>2026-07-14<br>in<br>the<br>cus-<br>tomer<br>terms,<br>EN<br>+<br>DE;<br>clause<br>map-<br>ping<br>G.2.x<br>→<br>10.1–<br>10.6<br>+<br>pre-<br>am-<br>ble;<br>no-<br>ti-<br>fi-<br>ca-<br>tion<br>dis-<br>patch<br>pend-<br>ing).<br>PA-10.3<br>con-<br>verted<br>to<br>the<br>trader<br>reg-<br>is-<br>ter<br>+<br>sta-<br>tus<br>con- |

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|             |            |                                  | <p>fir-<br/>ma-<br/>tion<br/>with<br/>the<br/>li-<br/>cence-<br/>cou-<br/>pled<br/>pop-<br/>u-<br/>la-<br/>tion<br/>rule.<br/>PA-10.4<br/>re-<br/>cited<br/>onto<br/>the<br/>real<br/>clause<br/>10.5.</p>                                                                         |
| 1.2.0-draft | 2026-07-09 | VV rebase + validation-readiness | <p><del>Provider</del>/eaternity<br/>based<br/>onto<br/>Em-<br/>pCo<br/>v0.4.0-<br/>draft-<br/>vv<br/>(VVB/<br/>state-<br/>ments/<br/>la-<br/>bel<br/>li-<br/>cence).<br/>Added<br/>PA-01.1<br/>(ISO<br/>14067<br/>§C.2<br/>or-<br/>gan-<br/>i-<br/>sa-<br/>tion),<br/>PA-07.3</p> |

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|             |            |                    | (QA-out-come ev-i-dence map), for-malised PA-08 sam-pling pro-ce-dure, cor-rected PA-10.1 to the hon-est AGB sta-tus (live terms 2020-03-09 lack An-nex G; Em-pCo mod-ule drafted, pend-ing le-gal re-view). |
| 1.0.0-draft | 2026-05-01 | Initial submission | Initial commit on provider/eaternity<br>tial<br>Ea-ter-nity                                                                                                                                                  |

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|         |      |                | EOS<br>path-<br>way<br>an-<br>nex,<br>ex-<br>tracted<br>from<br>the<br>pre-<br>re-<br>work<br>v0.3.3<br>mono-<br>lithic<br>scheme<br>doc-<br>u-<br>ment<br>set<br>(pre-<br>served<br>at<br>git<br>tag<br>archive/<br>v0.3.3-<br>eaternity-<br>monolithic).<br>Con-<br>tent<br>cov-<br>ers<br>PA-01..08<br>per<br>the<br>canon-<br>i-<br>cal<br>tem-<br>plate;<br>rat-<br>ing<br>thresh-<br>olds,<br>bench-<br>mark,<br>and |

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|         |      |                | EOS<br>ar-<br>chi-<br>tec-<br>ture<br>con-<br>tent<br>orig-<br>i-<br>nally<br>lived<br>in<br>scheme<br>An-<br>nexes<br>A,<br>B,<br>and<br>E<br>re-<br>spec-<br>tively,<br>which<br>have<br>been<br>re-<br>moved<br>from<br>the<br>frame-<br>work<br>on<br>main. |