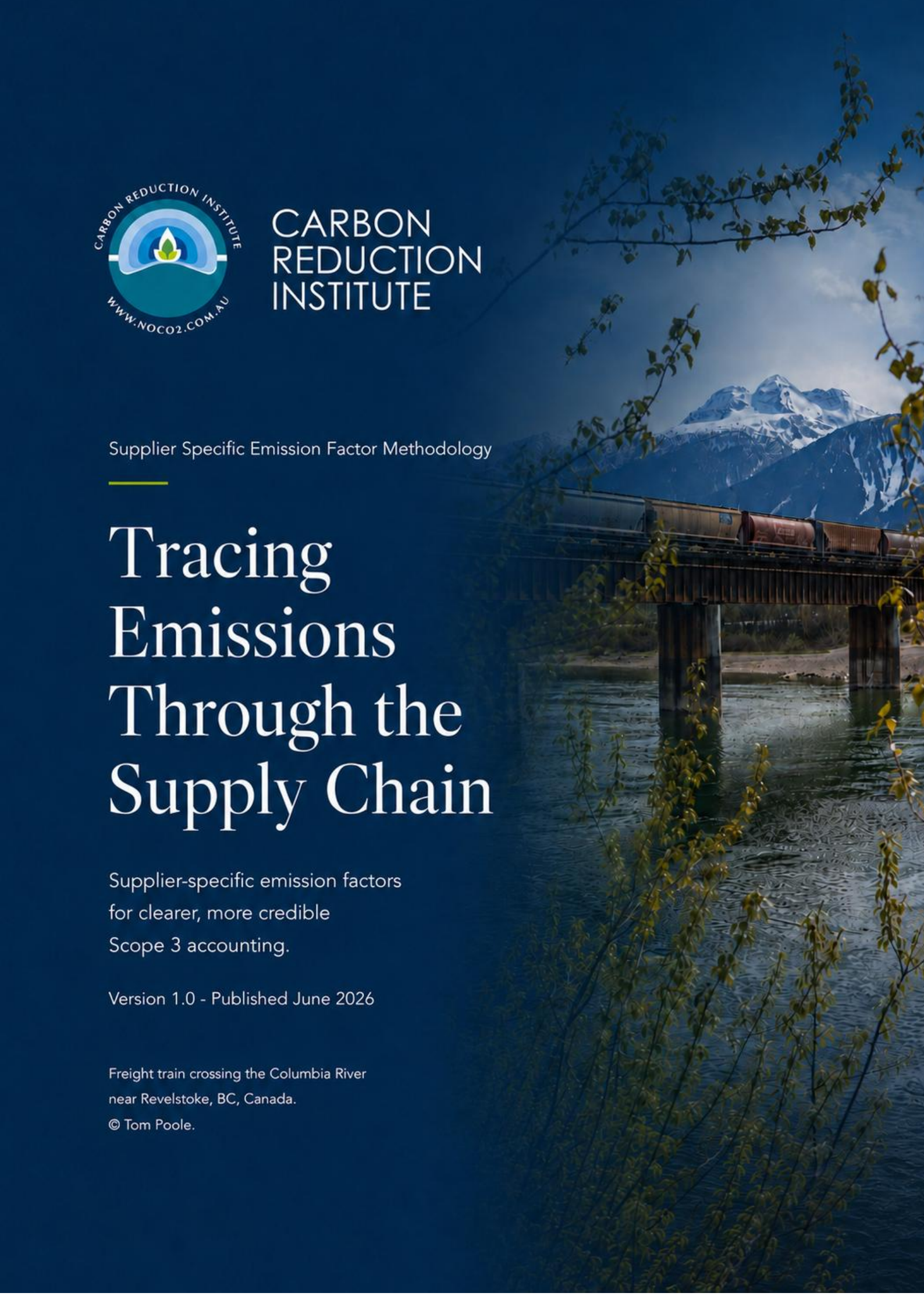
CARBON REDUCTION INSTITUTE

Supplier Specific Emission Factor Methodology

Tracing Emissions Through the Supply Chain

Supplier-specific emission factors for clearer, more credible Scope 3 accounting.

Version 1.0 - Published June 2026



Freight train crossing the Columbia River near Revelstoke, BC, Canada.

VERSION DETAILS

Table 1: Version Details

Document Version:	1.0.0
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Each version of this document is identified by its version number, publication date, and effective date as stated above. The organisation is responsible for referencing a document version with an effective date that meets the requirements of the NoCO2 Net Zero Standard applicable for the reporting period for which the Standard is being employed.

LICENCE

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1. SCOPE & PURPOSE

This document is a companion to the NoCO2 Net Zero Standard. It specifies two distinct methodologies for calculating a Supplier Specific Emission Factor (SSEF), representing the intensity of greenhouse gas (GHG) emissions embodied in the provision of a good or service, suitable for use by a purchaser as a Scope 3 Category 1 (Purchased Goods & Services) emission factor. It mirrors the Data Quality requirements of the Standard (4.6), and in particular the Supplier Specific Emission Factor Assessment (Standard 4.6.4), which sets out what the Standard requires of an SSEF that an organisation relies on.

It is written for two audiences:

- Organisations applying the NoCO2 Net Zero Standard, who wish to publish an SSEF in conformance with its best practice requirements; and
- Organisations with no net zero obligations in relation to the Standard, that wish to provide a credible SSEF to their customers.

The SSEF boundary is sourced from the NoCO2 Net Zero Standard. Certain requirements within this document reflect the NoCO2 Net Zero Standard; these are referenced with section numbers that correspond to the locations within the Standard where relevant.

This document defines a single standard for an adequate SSEF. It does not vary its requirements by who will consume the factor or by whether a purchaser intends to use it in an assured or publicly disclosed inventory; those are matters for a separate assurance engagement, which may use this document as part of its criteria.

This document does not address audit or assurance requirements under the NoCO2 Net Zero Standard. This document addresses only how an SSEF is calculated and declared.

An organisation using this methodology without full compliance with the NoCO2 Net Zero Standard shall represent that use only as "Using methodologies from the NoCO2 Net Zero Standard" (or "Informed by…") and, per the standard's claims regime (standard 4.9.1), shall include the disclaimer: "This does not constitute compliance with the NoCO2 Net Zero Standard or a Net Zero claim under the Standard." An organisation that applies selected elements of this methodology while making a net zero claim not prepared in accordance with the standard shall instead use the standard's partial application statement: "This Net Zero claim does not constitute compliance with the NoCO2 Net Zero Standard or a Net Zero claim under the Standard."

2. REFERENCES

2.1. NORMATIVE

The following referenced documents are required for the application of this methodology:

- NoCO2 Net Zero Standard
- ISO 14067: Greenhouse gases - Carbon footprint of products.
- ISO 14040 / ISO 14044: Environmental management - Life cycle assessment.
- ISO 14025: Type III environmental declarations (EPD); and applicable Product Category Rules (PCR).
- ISO 14064-3: Verification and validation of GHG statements.

2.2. INFORMATIVE

The following referenced documents are informative and may assist in the application of this methodology:

- GHG Protocol Product Life Cycle Accounting and Reporting Standard; Corporate Value Chain (Scope 3) Standard and Technical Guidance (Category 1)
- WBCSD PACT: PACT Methodology for Calculating and Exchanging Cradle-to-Gate Product Carbon Footprints (PCFs)
- ABS Australian National Accounts: Input-Output Tables – Input-Output Product Groups (IOPG) (Annex A).

3. CONVENTIONS

To ensure clarity and consistency, this document uses specific terminology to indicate the nature of the organisation's obligations. The following terms apply throughout the document, where:

- **shall** indicates a mandatory requirement;
- **should** indicates a recommendation for best practice; and
- **may** indicates a permissible action.

In reference to the NoCO2 Net Zero Standard, this document uses the term of "the Standard". Where a requirement of this methodology document conflicts with the Standard, the Standard prevails.

4. TERMS & DEFINITIONS

- **Supplier Specific Emission Factor (SSEF)**: an emissions intensity ($kgCO_2e$ per declared unit, and/or per $) representing the GHG emissions embodied in a good or service supplied by an organisation; calculated under this methodology.
- **Conforming organisation**: an organisation maintaining a Net Zero Inventory and Public Disclosure Statement conforming to the NoCO2 Net Zero Standard. (Used where it shortens the text; this methodology does not itself confer or assess conformance — that is the standard's province.)
- **Product Pathway**: derivation of an SSEF from a product life cycle assessment, Product Carbon Footprint or EPD (6.1).
- **Organisation Pathway**: derivation of an SSEF by allocating an organisational boundary GHG inventory across the goods and services it supplies (6.2).
- **SSEF Group:** a grouping of one or more of an organisation's goods and services for which a single SSEF intensity is calculated under the Organisation Pathway (6.2.5.2).
- **Declared unit**: a quantity of a product used as the reference for a partial carbon footprint where the product's downstream function and associated functional unit is not defined, e.g. 1 tonne, 1 m^2, 1 kWh delivered.
- **Functional unit**: the quantified performance of a product fulfilling a defined function; used only where the supplied item has a defined function the supplier controls.
- **Partial carbon footprint (partial CFP)**: a footprint limited to selected life cycle stages (here, cradle-to-handover). It cannot be the basis of a comparative assertion unless compared items share an identical boundary, declared unit and ruleset.
- **Primary data**: activity specific data from the operations concerning product or service production (e.g. metering, invoices, process measurement, an upstream supplier's verified product footprint).
- **Secondary data**: generic data not specific to operations concerning product or service production, that is used to model such activities (e.g. LCI databases such as ecoinvent/EXIOBASE, national factor sets, EEIO/spend-based factors).
- **Primary data share**: the share of an SSEF's total emissions calculated from primary data.
- **Allocation**: assigning the inputs or emissions of a multi-output process or organisation among its outputs.
- **Co-product/by-product/waste**: outputs of a process with, respectively: joint value, incidental value, no value with a positive disposal cost. Waste receives zero allocation.
- **ABS Input-Output Product Group (IOPG)**: a product grouping (100+) in the ABS Input-Output Tables. The IOPG is the minimum output decomposition for Organisation Pathway SSEFs (6.2.5.2) and the basis upon which economy wide EEIO factors are for the Australian economy are built.
- **EEIO (environmentally-extended input-output) factor**: an economy-wide emissions intensity (e.g. $kgCO_2e$/AUD) for a sector; complete but low specificity. An EEIO economy average is not a supplier-specific factor.
- **Credit adjusted SSEF:** an SSEF upon which the effect of qualifying carbon credits retired by the organisation has been applied, presented as a supplementary figure alongside the unmodified SSEF; declarable only under the conditions of section 7 (credits meeting Standard 4.8 and third party assurance).

5. PRINCIPLES

- **Responsibility Based Boundaries:** An SSEF captures the emissions embodied in the supplied unit up to the point responsibility for it passes to the purchaser, which is handover. The boundary follows responsibility rather than a fixed physical gate, so each emission is counted once in the correct inventory.
- **Completeness:** Every material emission within the boundary is captured; under the Organisation Pathway, 100% of within boundary emissions are allocated across outputs, with no category silently omitted.

- **Transparency:** Every material methodological choice is documented, so a purchaser can evaluate and correctly use the SSEF.
- **Consistency:** Methods, factor sources and allocation bases are applied consistently across periods, with transparent disclosure of changes.

6. PATHWAYS

This methodology provides two methods for calculating an SSEF. Both produce a factor on the same cradle-to-handover boundary and are recorded in the same SSEF Declaration (REF); an organisation selects the pathway that best fits the disclosure requirements of their stakeholders, and how it readily it may meet the requirements of either.

- **Product Pathway:** This pathway derives an SSEF from a product level study, such as a Life Cycle Assessment, Product Carbon Footprint, or Environmental Product Declaration. It suits an organisation that holds, or can commission, a product specific footprint for the good or service concerned, and is the appropriate route where a factor is needed for an individual product or for a product whose footprint is already independently assessed.

- **Organisation Pathway:** This pathway derives SSEFs by allocating the organisation's entire GHG inventory across the goods and services it supplies. It suits an organisation that maintains, or can assemble, a complete inventory and wishes to publish SSEFs across broad categories of output goods and services, without commissioning or having need of a separate product study for each, and is the natural route where the organisation already maintains a Net Zero Inventory under the Standard.

6.1. PRODUCT PATHWAY

Where an SSEF is derived from a Life Cycle Assessment (LCA), Product Carbon Footprint (PCF), or Environmental Product Declaration (EPD), the organisation shall quantify the product carbon footprint in accordance with ISO 14044, ISO 14067, or ISO 14025 (Type III EPD), applying the relevant Product Category Rule (PCR) where one exists.

This document does not restate the ISO requirements for quantification, allocation, co-product treatment, or other methodological choices, except as set out in the following subsections.

6.1.1. BOUNDARY

An SSEF shall represent the GHG emissions embodied in the supplied good or service up to the point of handover to the purchaser, and shall exclude emissions downstream of handover. The purchaser's use of the product, its end-of-life treatment, and its onward transport and distribution are outside the boundary. Including them would double count the purchaser's own downstream within the factor it buys. Outbound logistics purchased by or performed by the supplying organisation before the purchaser takes responsibility are included.

The boundary is the same for goods and services; for a service, "embodied up to handover" means the emissions of delivering the service (the provider's operations and its purchased inputs), referenced to a declared unit (e.g. per service hour, per $ spend), with overhead allocation between service offerings.

The organisation shall harmonise the assessment result to this boundary. Where the assessment extends beyond handover (for example to cover use, end-of-life, or downstream transport or installation), the organisation shall remove those stages. Where the assessment stops short of handover, the organisation shall calculate and include the components missing up to handover, typically the outbound transport for which the supplier is responsible.

Where the SSEF is derived from an assessment prepared under a Product Category Rule, the organisation shall include every emission category within this boundary regardless of any exclusion made by that PCR, including any category the PCR places outside its own scope (for example direct land use change or upstream forestry emissions).

6.1.2. COMPLETENESS & MATERIALITY CUT OFF

The underlying product footprint may be prepared under ISO 14067, under ISO 14025 with the applicable PCR, or under ISO 14040/14044. Each requires a documented, justified cut-off, and this methodology does not set a fixed numeric threshold.

Where the study applies a cumulative materiality cut-off, the Primary SSEF shall be increased by twice that cut-off, to provide a conservative allowance for the contributions it omits (e.g. a 1% cut-off requires a 2% increase). The cumulative cut-off applied shall be documented and disclosed; a study that does not document its cut-off shall not be used to derive an SSEF.

6.1.3. DECLARED UNIT

Each SSEF shall be expressed per a declared unit representative of how the output is supplied.

A physical declared unit (e.g. $kgCO_2e$ per item, tonne, kWh delivered, service hour) is preferred where a representative one exists. It removes price volatility and allows a purchaser to perform activity based accounting.

The declared unit shall state the product description, quantity basis, and life cycle stages included (cradle-to-handover), and be applied consistently across periods.

6.1.4. DATA QUALITY

The organisation shall ensure the study underlying the SSEF meets the data quality requirements of the standard under which it is prepared, including temporal, geographical and technological representativeness. This applies whether the organisation relies on a pre-existing study or commissions a study for the SSEF.

a) The organisation shall record the name, version, and reference year of every factor source relied upon in the SSEF Declaration, so that a purchaser can review the basis (Standard 4.6.4.b.i).

b) Where the organisation itself converts gas quantities to CO_2-equivalents, it shall:
   i) use the latest available IPCC GWP_{100} characterisation factors, in accordance with the standard's quantification requirements; and
   ii) document the IPCC assessment report from which those factors are taken.

c) Where the organisation relies on a published composite factor set (e.g. national factor publication, LCI database, EEIO dataset), it may apply the set as published and need not restate the characterisation embedded within it.

6.1.5. IMPORTED & GENERATED ENERGY

The organisation shall account for imported and self-generated energy on the market-based method, in accordance with the standard's Imported Energy and Generated Energy requirements (Standard 4.5.5.3 and 4.5.5.4). This methodology does not restate those requirements; they are reproduced for reference in Annex A.

Under those requirements, imported electricity, heat, and steam are accounted on the market-based method. A conversion factor below the grid average may be claimed only through a valid contractual instrument (for example a PPA, an EAC, or an SSEF) whose attributes the organisation exclusively owns and has retired, and that matches the reporting period and the relevant geographic market. Energy whose attributes are not owned and retired is treated as null power with the residual mix factor, and where no instrument applies a defined preference order of fallback conversion factors governs. Self-generated energy may carry the organisation's own generation factor only where either no EACs are generated, or it retains and retires any associated certificates; otherwise, it too is null power. Exported energy is reported separately, is not deducted from imported energy, and its generation emissions remain in the organisation's inventory.

The market-based method is required to prevent the double counting of clean generation. A location-based method spreads the grid average factor across all participants, including those that have not procured clean energy, allowing an organisation to report a lower electricity emissions intensity on the strength of renewable output whose attributes another party holds the exclusive right to claim. The market-based method assigns clean generation only to the holder of the corresponding EAC, so an SSEF reflects the energy the organisation has actually procured.

A pre-existing LCA, EPD or PCF shall have its imported and generated energy component remodelled to conform to Standard 4.5.5.3 and 4.5.5.4 as outlined above before its result is used as an SSEF; a new assessment shall model that component conformingly from the outset.

Where the SSEF relies on a contractual instrument or a supplier specific emission factor, the organisation shall include the supporting evidence and documentation required by the Standard (Standard 4.5.5.3.b and 4.5.5.3.d) in the SSEF Declaration.

6.1.6. BURDEN ALLOCATION OF RECOVERED MATERIALS

ISO 14067 and 14044 permit more than one treatment of recycling and recovered material flows (e.g. cut-off, avoided-burden/closed-loop approximation, or a PCR-specified method). For an SSEF the organisation shall apply a "cut-off" system model where the environmental burdens of producing a product and of handling its wastes are allocated to the primary user of that product.

- A secondary (recovered) material entering the product as an input shall bear only the burdens of the recovery/recycling process itself — not the upstream virgin-production burdens of the material it displaces. Recovered inputs therefore enter the SSEF at their recycling-process emissions, with no inherited cradle burden.

- The product shall not receive any credit or deduction for the recyclability of, or recovered material derived from, its own waste stream downstream of handover. No avoided burden credit for displacing future virgin production may be netted into the SSEF. Post-handover recovery stages are in any case removed by boundary harmonisation; this rule additionally bars such credits from being folded back into the cradle-to-handover result.

- Where a pre-existing LCA, EPD or PCF that the SSEF is derived from was modelled on an avoided-burden or system expansion basis (e.g. scrap steel/aluminium credit), those credits shall be removed and the recovered material flows restated on the cut-off basis before the result is used as an SSEF.

6.2. ORGANISATION PATHWAY

SSEFs may be derived via allocation of an organisation's GHG inventory categories within the SSEF boundary as specified in 6.2.1, across all the goods and services it supplies. The following subsections outline the required steps to produce a conforming SSEF under this pathway.

6.2.1. BOUNDARY

An SSEF shall represent the GHG emissions embodied in the supplied good or service up to the point of handover to the purchaser, and shall exclude emissions downstream of handover. The purchaser's use of the product, its end-of-life treatment, and its onward transport and distribution are outside the boundary. Including them would double count the purchaser's own downstream within the factor it buys. Outbound logistics purchased by or performed by the supplying organisation before the purchaser takes responsibility are included.

The boundary is the same for goods and services; for a service, "embodied up to handover" means the emissions of delivering the service (the provider's operations and its purchased inputs), referenced to a declared unit (e.g. per service hour, per $ spend), with overhead allocation between service offerings.

The SSEF boundary comprises the upstream elements of the NoCO2 Net Zero Inventory (standard 4.5.3.1) together with Category 16a (i.e. the categories of the Net Zero Inventory up to and including handover, excluding those downstream of it). The inventory shall be assembled on the operational control boundary (standard 4.4) with the following inclusions:

Scope 1: Direct GHG Emissions and Removals[1]

- Stationary Combustion
- Mobile Combustion
- Fugitive Emissions
- Process Emissions
- Agricultural Emissions
- Land Use & Land Use Change

Scope 2: Indirect GHG Emissions from Imported Energy

[1] Excluding short cycle biogenic carbon oxidation (standard 4.5.4.2)

Scope 3: Indirect GHG Emissions

- Category 1: Purchased Goods & Services
- Category 2: Capital Goods
- Category 3: Upstream Energy Production (Excluding Scope 1 & Scope 2)
- Category 4: Upstream Transportation & Distribution
- Category 5: Waste Generation
- Category 6: Business Travel
- Category 7: Employee Commuting
- Category 8: Upstream Leased Assets
- Category 16a: Facilitated & Insurance Associated Emissions
  - Claims Payment Associated Activities (Discretionary)

6.2.2. DECLARED UNIT

Each SSEF shall be expressed per a declared unit representative of how the output is supplied.

- A physical declared unit (e.g. $kgCO_2e$ per item, tonne, kWh delivered, service hour) is preferred where a representative one exists. It removes price volatility and allows a purchaser to perform activity based accounting.
- A per dollar expression ($kgCO_2e$ per $) may be used under this pathway.

The declared unit shall state the product description, quantity basis, and life cycle stages included (cradle-to-handover), and be applied consistently across periods.

6.2.3. DATA QUALITY

The organisation shall select the highest quality activity data and conversion factors available, align them to the reporting period within the factor vintage limits, and apply the data quality ranking, in accordance with the NoCO2 Net Zero Standard (Standard 4.5.5.1 and 4.6.1).

a) The organisation shall record the name, version, and reference year of every factor source relied upon in the SSEF Declaration, so that a purchaser can review the basis (Standard 4.6.4.b.i).

b) Where the organisation itself converts gas quantities to CO_2-equivalents, it shall:
   i) use the latest available IPCC GWP_{100} characterisation factors, in accordance with the standard's quantification requirements; and
   ii) document the IPCC assessment report from which those factors are taken.

c) Where the organisation relies on a published composite factor set (e.g. national factor publication, LCI database, EEIO dataset), it may apply the set as published and need not restate the characterisation embedded within it.

d) The organisation shall draw the emissions inventory and the data used to allocate it across outputs (6.2.5.3) from the same reporting period, so that, for example, a financial year inventory is not allocated using a revenue from a different year.

6.2.4. IMPORTED & GENERATED ENERGY

The organisation shall account for imported and self-generated energy on the market-based method, in accordance with the standard's Imported Energy and Generated Energy requirements (Standard 4.5.5.3 and 4.5.5.4). This methodology does not restate those requirements; they are reproduced for reference in Annex C.

Under those requirements, imported electricity, heat, and steam are accounted on the market-based method. A conversion factor below the grid average may be claimed only through a valid contractual instrument (for example a PPA, an EAC, or an SSEF) whose attributes the organisation exclusively owns and has retired, and that matches the reporting period and the relevant geographic market. Energy whose attributes are not owned and retired is treated as null power with the residual mix factor, and where no instrument applies a defined preference order of fallback conversion factors governs. Self-generated energy may carry the organisation's own generation factor only where either no EACs are generated, or it retains and retires

any associated certificates; otherwise, it too is null power. Exported energy is reported separately, is not deducted from imported energy, and its generation emissions remain in the organisation's inventory.

The market-based method is required to prevent the double counting of clean generation. A location-based method spreads the grid average factor across all participants, including those that have not procured clean energy, allowing an organisation to report a lower electricity emissions intensity on the strength of renewable output whose attributes another party holds the exclusive right to claim. The market-based method assigns clean generation only to the holder of the corresponding EAC, so an SSEF reflects the energy the organisation has actually procured.

Where the SSEF relies on a contractual instrument or a supplier specific emission factor, the organisation shall include the supporting evidence and documentation required by the standard (Standard 4.5.5.3.b and 4.5.5.3.d) in the SSEF Declaration.

6.2.5. METHOD

The Organisation Pathway SSEF is produced through the following steps.

6.2.5.1. ASSEMBLE COMPLETE INVENTORY

The organisation shall assemble the inventory of 6.2.1, including all listed categories (standard 4.6.4.b.ii), and shall quantify it per the standard's quantification and methodology requirements (standard 4.5.4 to 4.5.5), including the energy modelling clauses (6.2.4) and data rules (6.2.3). Producers with an inventory conforming to the Standard already meets these requirements; any other producer shall assemble an inventory covering all 6.2.1 categories to the same requirements.

Completeness requires the inventory to include all categories in 6.2.1, and that 100% of those emissions are allocated across the organisation's outputs. There is no category level cut-off; everything within the boundary is allocated across the products and services output by the organisation.

6.2.5.2. DEFINE SSEF GROUPS

A purchaser relies on an SSEF to estimate the emissions embodied in a particular good or service, and to compare providers of it. Where an organisation supplies outputs whose emission intensities materially differ, a single blended SSEF would misrepresent each of them. An organisation providing both freight and warehousing services, for instance, that published one per-$ SSEF spanning both would give purchasers a figure accurate for neither service, and would frustrate comparison against dedicated providers of either.

To establish a consistent minimum degree of granularity for decomposition of inventories across organisations, this methodology uses national input-output product tables (e.g. ABS Input-Output Product Groups for Australia).

a) The organisation shall define the set of SSEF Groups for which it will produce SSEF intensities. An SSEF Group is a grouping of one or more of the organisation's goods and services for which a single SSEF intensity is calculated.

   i) The organisation shall identify all of its revenue generating goods and services and assign each to the ABS Input-Output Product Group (IOPG) to which it belongs.
      – Non-Australian producers may disaggregate to equivalent national input-output table product classifications.

   ii) The organisation shall define its SSEF Groups, each being at minimum the aggregate of products mapped to a unique IOPG, or a finer decomposition of a products mapped to the same IOPG (e.g. a product line, production run, or recipe). The organisation may decompose as finely as it wishes, subject to (iii).

   iii) Where an SSEF Group accounts for less than 5% of the organisation's total revenue, the organisation shall not publish a distinct Organisation Pathway SSEF for it. It may instead fold the Group's emissions into the most closely related SSEF Group for which an SSEF is produced: where other SSEF Groups share its IOPG, into one of those; otherwise into the most closely related SSEF Group in another IOPG. Where a distinct SSEF is required for a good or service within the Group below the 5% threshold, it should be derived via the Product Pathway (6.1).

   iv) The SSEF Groups remaining after (iii) are those for which the organisation shall calculate a distinct SSEF. For each, the organisation shall establish a declared unit (i.e. the reference unit the SSEF intensity is expressed per). A physical

declared unit (e.g. per tonne, per m^3, per item) shall be used where a representative one exists. For non-mass declared units related to physical goods (e.g. m2, L, or m3 of product), the mass per declared unit shall be recorded (e.g. kg per m2, t per kL).
  - Where no representative physical unit exists, or where the SSEF Group is economically allocated, a per-dollar unit may be the declared unit.

b) The organisation shall ensure its SSEF Groups capture 100% of organisational revenue for the reporting period the inventory is based upon.

6.2.5.3. ALLOCATE EMISSIONS ACROSS SSEF GROUPS

a) The organisation shall allocate 100% of emissions within the SSEF Boundary defined in 6.2.1 across all the SSEF Groups defined in 6.2.5.2. No emissions within the boundary shall be left unallocated.

b) The organisation shall allocate emissions with preference for the following hierarchy:

i) Physical Allocation: Emission sources directly attributable to a single SSEF Group shall be assigned on a physical or causal basis. A source is directly attributable where it is metered per SSEF Group, or attributable through existing records (e.g. dedicated vehicles, sites, equipment, or staff).

ii) Economic Allocation: For emission sources where a physical or causal basis is not able to be established, or which are genuinely shared between SSEF Groups (e.g. a support office providing administrative services to the organisation), emissions may be allocation based upon the revenue share between the SSEF Groups.
  - The organisation shall ensure that data used to allocate inventory emissions across SSEF Groups (e.g. product revenue), corresponds to the same reporting period as the inventory data.

6.2.5.4. DERIVE SSEF INTENSITIES

a) The organisation shall calculate each SSEF Group's SSEF intensity against the declared unit established in 6.2.5.2, dividing the emissions allocated to that SSEF Group by the SSEF Group's quantity in its declared unit.
  i) Where a physical declared unit was established, the intensity is expressed as $kgCO_2e$ per declared unit (e.g. per tonne, per m^3, per item).
  ii) Where a per-dollar unit was established, the intensity is expressed as $kgCO_2e$ per $.

7. CARBON CREDITS & SSEF ADJUSTMENT

An SSEF shall be calculated and disclosed before the application of any carbon credits. This unmodified SSEF is the primary figure, and is the SSEF a purchaser uses by default.

a) A credit-adjusted SSEF (an SSEF reduced by the effect of qualifying carbon credits the organisation has retired) may additionally be declared (8) only where the following are met:
  i) the credits meet the carbon credit requirements of Standard 4.8, including the CDR eligibility criteria, the approved methodologies, and the permanence-risk and reversal management requirements;
  ii) the SSEF has been third-party assured, at minimum to limited assurance, under an engagement meeting the requirements of Standard 6.1, including verifier independence (Standard 6.1.c); and
  iii) the credits used have been retired prior to the disclosure to which the credit adjusted SSEF relates.

b) Under the Organisation Pathway, the organisation shall not assign retired carbon credits to a particular SSEF Group. Qualifying credits retired in the period shall be allocated across all SSEF Groups in proportion to each Group's share of the total emissions allocated across all SSEF Groups (6.2.5.3). For example, an SSEF Group accounting for 10% of those emissions is allocated 10% of the qualifying credits retired in the period.

c) The assurance of (a.ii) shall cover the credit layer: the Standard 4.8 eligibility of the credits, evidence of their retirement, reversal-risk management, the adjustment arithmetic, and the declaration requirements of Sections 10 and 11. The extent to which the engagement shall also cover the base SSEF depends on the pathway:

i) **Product Pathway:** where the base figure derives from an LCA, EPD, or PCF already critically reviewed or verified, the engagement may rely on that review and need extend only to the credit layer. Where the base figure is a new or previously unverified assessment, the engagement shall be expanded to cover the credit layer.
ii) **Organisation Pathway:** the engagement shall cover the whole basis of the SSEF, namely the inventory and data quality requirements of Standard 4.5 and 4.6, the carbon credit requirements of Standard 4.8, and this methodology's boundary, allocation and declaration requirements.

8. SSEF DECLARATION

An SSEF shall be accompanied by a structured SSEF Declaration (Annex B) so a purchaser can evaluate, trust, and correctly use it; the bare intensity number alone is not a conforming SSEF. There is one Declaration. Fields tied to a feature a product may lack (biogenic or land-use flows, contractual energy instruments, credit adjustment, per-$ expression) shall be declared and recorded as "not applicable".

The declaration, per SSEF, shall at minimum state:

- **Issuer:** The name and identifiers of the issuing organisation.
- **Product:** The good or service the SSEF covers, with description and identifiers. Under the Organisation Pathway, where the SSEF represents an SSEF Group spanning multiple goods or services, all of them shall be listed.
- **Pathway:** The pathway used (Product, via LCA/EPD/PCF; or Organisation, inventory derived).
- **Applied Standards & Rulesets:** List of any applied standards and rules, including the applied version of this methodology. For the Product standard, typically ISO 14067 or ISO 14025 plus the PCR applied. For the Organisation Pathway, typically the Standard's 4.4, 4.5, 4.6, and 4.8 requirements.
- **Reference Period:** The reporting period the SSEF represents.
- **Production Geography:** The geography in which the product is produced.
- **Declared Unit:** The unit the SSEF is expressed per, including its quantity (e.g. 1 tonne, 1 L, 1 kWh delivered, $ spend). For goods, the mass per declared unit should additionally be provided.
- **Boundary:** Cradle-to-handover; categories per 6.1.1 or 6.2.1; and whether packaging is included.
- **IOPG Code**: Under the Organisation Pathway, the ABS Input-Output Product Group to which the product belongs (when the declared unit is per $).
- **SSEF Components**: Each reported as kgCO_2-equivalent per declared unit, or "Not Applicable" where the flow is absent.
  - **Fossil and Process GHGs:** The CO_2, CH_4, N_2O and fluorinated gases arising from fossil fuel use and from industrial process reactions (e.g. cement calcination), expressed as CO_2-equivalent.
  - **Biogenic CO_2, Non-Short Cycle:** The biogenic CO_2 emitted from oxidation of biomass sourced from stable carbon stocks.
  - **Biogenic CO_2, Short Cycle Oxidation:** The biogenic CO_2 emitted from oxidation of biomass sourced from short-cycle carbon stocks (e.g. annual crops, residues, sustainably managed rotation forestry). Non-attributable under the standard and excluded from the Primary SSEF.
  - **Biogenic CH_4 and N_2O:** The CH_4 and N_2O arising from biogenic sources, expressed as CO_2-equivalent; treated as GHG emissions regardless of carbon cycle.
  - **Land Use Change (LUC):** The GHG emissions from land use change attributable to raw material sourcing.
  - **Biogenic CO_2 Uptake and Removals:** The biogenic CO_2 sequestered in and embodied by the product at handover, reported as a negative value. Not netted into the Primary SSEF.
- **Primary SSEF:** The sum of the following SSEF Components, expressed as kgCO2-equivalent per declared unit.
  - Fossil and Process GHGs
  - Biogenic CO_2, Non-Short Cycle
  - Biogenic CH_4 and N_2O
  - Direct Land-Use Change (dLUC)
- **Credit Adjusted SSEF:** Where declared under the conditions of 7, the Primary SSEF after deducting the effect of qualifying retired carbon removal credits, expressed as kgCO_2e per declared unit and presented alongside (not in place of) the Primary SSEF. May be omitted where no credit adjustment is declared.
- **Excluded & Exempted Emissions:** The share and description of any emissions excluded or exempted under any Product Pathway cut-off rules employed (6.1.2).

- **Materiality Cut-Off Cumulative Threshold (%):** The cumulative materiality cut-off applied by the underlying Product Pathway study, expressed as a percentage of the total footprint; the Primary SSEF is increased by twice this value (6.1.2). Recorded as "Not Applicable" under the Organisation Pathway, which applies no cut-off.
- **Factor & Data Sources:** The name, edition, version, and reference year of every factor source, including the IPCC assessment report used for characterisation and any EEIO or secondary proxy datasets.
- **Allocation:** A description of the allocation rules applied, including how genuinely shared emissions were treated.
- **Primary Data Share:** The share of the SSEF derived from primary data, stated qualitatively (which parts of the SSEF are primary and which are secondary) and, where calculated, quantitatively (primary sourced emissions divided by total emissions). An organisation targeting PACT interoperability calculates the primary data share per the current PACT Methodology.
- **Data Quality Score:** Under the Organisation Pathway, the weighted average data quality tier of the scope 3 components of the inventory the SSEF is derived from, assigned and weighted in accordance with the NoCO2 Net Zero Standard's data quality ranking (Standard 4.6.1). "Not Applicable" under the Product Pathway, whose data quality is governed by the framework the underlying study is prepared under.
- **Verification & Assurance Status:** The level, provider, engagement standard, and criteria of any assurance obtained. Mandatory where the SSEF is credit adjusted (7).
- **Credit Details:** Where a Credit-Adjusted SSEF is declared, the particulars of the qualifying carbon removal credits applied, reported in accordance with the NoCO2 Net Zero Standard's carbon credit reporting disclosure requirements (Standard 5.1.12): for each project, its identity and purpose, quality-criteria status, reversal insurance status, volume retired, registry, serial numbers, and vintage. "Not Applicable" where no credit adjusted SSEF is declared.
- **Contractual Energy Instruments:** Where the SSEF relies on contractual instruments to calculate its market-based energy factor (e.g. LGCs, RECs, or a PPA), the particulars of each instrument, reported in accordance with the NoCO2 Net Zero Standard's contractual instrument disclosure requirements (Standard 5.1.13): instrument type, quantity (MWh), vintage, registry, and serial numbers; and, for a PPA, the supplying facility, bundling/exclusivity, and market-boundary confirmations.

9. CLAIMS & COMPARABILITY

9.1. CLAIMS

a) Producing or disclosing an SSEF is not in itself a Net Zero claim and shall not be represented as one; a low SSEF intensity is not evidence of compliance with the Standard or achieving Net Zero targets.

b) A Net Zero claim under the Standard may be made only where full compliance has been achieved, and only using the Standard's permitted phrasing ("Net Zero Achieved under the NoCO2 Net Zero Standard" or "Net Zero Committed under the NoCO2 Net Zero Standard"), referencing the reporting period and a published PDS (Standard 4.9.1).

c) Terms such as "certified", "accredited" or "approved" shall not be used in relation to the Standard or this methodology.

d) A credit adjusted SSEF figure shall not be presented as a quantified abatement or offset outcome.

e) All statements shall be accurate and not misleading and comply with applicable consumer-protection law (the ACL and ACCC greenwashing guidance). Where this methodology is used without full compliance with the Standard, the section 1 disclaimers apply (use-without-a-claim or partial-application, as applicable).

9.2. COMPARATIVE ASSERTIONS

a) Two SSEFs are comparable only where they share the same boundary, declared unit, allocation approach, verification or assurance status, and ruleset. The ruleset is the full set of methodological rules under which an SSEF is prepared (for example, the energy product accounting and recovered material treatments, and any PCR applied). Because each of these is recorded in the SSEF Declaration, comparability can be confirmed directly from the Declarations being compared. An SSEF shall not be presented as comparable to a factor prepared on a different basis.

b) Such comparability extends only to the cradle-to-handover stage the SSEF covers. A public product versus product comparative assertion (a claim of overall environmental superiority or equivalence) requires a full ISO 14044 life cycle

assessment and critical review, undertaken by an interested party panel, with public disclosure of associated findings; a partial SSEF is not on its own a sufficient basis for such an assertion.

ANNEX A REFERENCE NOCO2 NET ZERO STANDARD SECTIONS

4.5.4.2 TREATMENT OF BIOGENIC CARBON

This standard adopts a life cycle assessment perspective on short cycle biogenic carbon, and as such deems that emissions arising from the oxidation, combustion or biodegradation of short cycle biogenic carbon should be included within the organisation's Non-Attributable Inventory (4.5.3.2). Inclusion of emissions within the Net Zero Inventory necessitates reduction and removal activities, and requiring abatement activities and use of carbon dioxide removals to balance biogenic carbon oxidation emissions disregards the sequestration that occurred during the biomass growth phase, leading to double accounting of the removal.

a) Biogenic CO_2 emissions and removals shall be quantified separately from fossil CO_2.

b) Emissions of biogenic CO_2 arising from the oxidation, combustion, or biodegradation of short cycle carbon biogenic products should be included within the organisation's Non-Attributable Inventory, reflecting that this biogenic CO_2 is associated with a corresponding amount of short cycle carbon sequestration prior to its emission.
   i) Biogenic products shall only be considered short cycle carbon where they are derived from biomass sourced from the following land use categories:
      1. Cropland: Land classified as cropland under IPCC guidelines (e.g. short rotation coppice, agricultural residues).
      2. Forest land – plantation: Forest land managed as a plantation (e.g. acacia and eucalypt plantations).
      3. Forest land – sustainably managed semi-natural: Forest land that does not meet the definition of a plantation, but is subject to a documented sustainable forest management (SFM) plan that enforces a harvest to regeneration cycle (rotation) to ensure long term carbon stability (e.g. continuous cover forestry, plenterwald, irregular shelterwood systems).
   ii) Where biomass is sourced from primary forests, unmanaged or degraded secondary forest, old growth stands, or land conversion activities (deforestation), biogenic CO_2 emission arising from its oxidation shall be included within the organisation's Net Zero Inventory, regardless of management status.
   iii) Biogenic CO_2 emissions associated with other phases of a short cycle carbon biogenic product life cycle (e.g. land use, land use change) shall be included within the organisation's Net Zero Inventory.

c) CH_4 and N_2O emissions arising from biogenic sources shall be treated as GHG emissions and converted to their CO_2-equivalent values using applicable GWP_{100} characterisation factors.

4.5.5.3 IMPORTED ENERGY

a) The organisation shall apply a market based method to calculate emissions from imported energy products such as electricity, heat, or steam.
   i) For disclosure purposes, the organisation may apply a location based method to calculate emissions from imported energy products, however the resultant emissions shall not be applied to the Net Zero Inventory.

b) Where contractual instruments are used to determine the conversion factor (e.g. PPAs, EACs, SSEFs), the organisation shall:
   i) document evidence of the instrument's validity including:
      – confirmation of exclusive ownership of any associated attributes; and
      – confirmation that the associated EACs have been retired or cancelled in the relevant registry (if applicable).
   ii) ensure the instrument applies to the same reporting period as the energy consumption;
   iii) ensure the instrument covers the relevant geographic market; and
   iv) disclose the details of the contractual instrument use in the PDS (**Error! Reference source not found.**).

c) Where energy is purchased from a third party that has created associated energy attribute certificate (EAC) but not transferred those EACs to the organisation, the purchased energy shall be treated as null power and quantified using the residual mix factor for the relevant grid or market.

d) Supplier specific emissions factors shall only be used where:
   i) for electricity the factor is supported by a contractual instrument that meets the requirements of (b); or
   ii) for other energy products (e.g. heat, steam, cooling), the factor is supported by supplier documentation for the reporting period confirming: the calculation method and system boundary, the gases covered, and the allocation method (if applicable).

e) Where no contractual instrument or SSEF applies, or where evidence of retirement or exclusive ownership of energy attributes cannot be demonstrated, the organisation shall:
   i) for electricity apply in order of preference:
      1. the residual mix factor of the relevant grid or market;
      2. the fossil only carbon intensity of the relevant grid or market; or
      3. the location based intensity divided by 1 minus the share of renewable electricity in the relevant grid or market.
   ii) For other imported energy products (e.g. steam, heating, cooling), apply regional, national, or technology average conversion factors with a preference for factors most representative of the delivered energy product.

4.5.5.3 GENERATED ENERGY

This subsection applies to electricity, heat, steam, or other energy products generated by the organisation that is either:
- self-consumed within the reporting boundary; or
- exported to the grid or a third party.

a) Generated energy for which energy attribute certificates (e.g. RECs, LGCs) have been created, the organisation shall only apply the conversion factor associated with the self-generated energy in accounting for the corresponding emissions, if they retain the ownership of the EAC and the certificate has been retired or cancelled on the relevant registry.
   i) Where the organisation sells, transfers, or fails to retire the EACs associated with the generated energy, the energy shall be treated as null power and quantified using the residual mix factor of the relevant grid or market.
   ii) Evidence of EAC ownership, transfer, or retirement shall be documented and disclosed in the PDS (**Error! Reference s ource not found.**).

b) Exported energy shall be reported separately from imported energy and shall not be deducted from imported energy quantities.
   i) The GHG emissions associated with the generation of exported energy shall remain included within the organisation's inventory.
   ii) Where the organisation retains ownership of any EACs associated with exported renewable energy, or exports renewable energy for which no EACs have been created or issued:
      – the exported quantity may be disclosed as avoided emissions within their Influence Based Inventory under category C, but shall not be deducted from the Net Zero Inventory (**Error! Reference source not found.**); and
      – any such disclosure shall clearly state that it represents an avoided emissions estimate outside the organisational boundary.

4.6.4 SUPPLIER SPECIFIC EMISSION FACTOR ASSESSMENT

While supplier specific emission factors (SSEFs) typically represent high quality primary data, use of SSEFs with deficient boundaries risk the integrity and accuracy of the organisation's GHG inventory and associated net zero claim.

a) Where the organisation employs the use of SSEFs based upon a Product Carbon Footprint (PCF/CFP), Life Cycle Analysis (LCA), or Environmental Product Declaration (EPD) they shall:
   i) in the case of PCFs and LCAs, ensure the assessment has either been critically reviewed by a third party to ISO 14044 or ISO 14067, or obtained at least limited assured in accordance with ISO 14064-3;
   ii) ensure the boundary of the assessment extends at minimum from cradle-to-factory-gate, including land use and land use change emissions. Where the supplying organisation pays for or performs the transport and distribution of the goods beyond the factory gate, the boundary shall extend to the point of handover. Handover is the point at which responsibility for the goods passes from the supplying organisation to the purchasing organisation; and
   iii) where the boundary of the available SSEF stops short of the point of handover (i.e. cradle-to-factory-gate), and the organisation does not purchase the transportation and distribution services required to receive the goods, estimate those transport and distribution emissions and include them within the SSEF.

Note: The boundary is drawn at handover so that transport and distribution emissions are counted once, in the correct inventory. Where the supplying organisation bears responsibility for transport of goods to the purchaser, those emissions are embodied in the SSEF up to handover. Where the purchasing organisation arranges and pays for that transport, the emissions instead fall within the purchaser's own Upstream Transportation & Distribution (Category 4) and shall be excluded from the SSEF to avoid double counting. Emissions associated with life cycle stages subsequent to handover, such as the use phase and end-of-life phase, are likewise accounted for separately within the organisation's GHG inventory, so their inclusion in the factor creates a risk of double accounting. Where the organisation employs GWP_{100} impacts taken from these stages, or factors with them embedded within, they should take care in the use and allocation of resulting emissions between inventory categories.

b) Where the organisation employ the use of SSEFs derived from the organisational GHG inventory, they shall:
   i) ensure the SSEF calculation and underlying organisational GHG inventory has either been subject to independent verification or transparently documented, including the calculation methodology, system boundary, inventory inclusions, and data sources, such that the purchasing organisation may review the SSEF basis; and
   ii) ensure the underlying GHG inventory includes all upstream elements of the Net Zero Inventory (**Error! Reference s ource not found.**), together with Category 16a. The required GHG Emission Categories being comprised of:

Scope 1: Direct GHG Emissions and Removals[2]
- Stationary Combustion
- Mobile Combustion
- Fugitive Emissions
- Process Emissions
- Agricultural Emissions
- Land Use & Land Use Change

Scope 2: Indirect GHG Emissions from Imported Energy

Scope 3: Indirect GHG Emissions
- Category 1: Purchased Goods & Services
- Category 2: Capital Goods
- Category 3: Upstream Energy Production (Excluding Scope 1 & Scope 2)
- Category 4: Upstream Transportation & Distribution
- Category 5: Waste Generation
- Category 6: Business Travel
- Category 7: Employee Commuting
- Category 8: Upstream Leased Assets
- Category 16a: Facilitated & Insurance Associated Emissions
  - Claims Payment Associated Activities (Discretionary)

Note: The organisation may employ the use of SSEFs derived from GHG inventories or product life cycles with more comprehensive boundaries, however their use may lead to double accounting and potential overstatement of emissions unless accounted for.

c) Where SSEFs fail to meet the requirements of (a) or (b), the organisation shall instead employ the use of the highest quality secondary data available that is representative of the service or product category.

d) Where the emissions intensity of an SSEF has been modified through the use of carbon credits, the organisation shall only employ the use of the SSEF where the credits used and CDR reversal risk management meet the requirements of **Error! R eference source not found.**.
   i) Where the credits fail to meet the CDR eligibility criteria of this standard, the organisation shall account for any associated emissions from the procured good or service using the SSEF emissions intensity unmodified by credits, or should this not be available, using the highest quality secondary data available that is representative of the service or product category.

[2] Excluding short cycle biogenic carbon oxidation

ii) The organisation may disclose the difference between the emissions calculated as per (i) and the original SSEF as a reduction within their Influence Based Inventory, under Category C (Other Impacts, Benefits & Insetting).

4.8 CARBON CREDITS

4.8.1 ABATEMENT PRINCIPLES

Carbon dioxide removal (CDR) credits shall only be used after all reduction obligations (4.7) are fulfilled. A marginal abatement cost assessment should be conducted to determine further economically viable reduction opportunities before the purchase of CDRs.

All CDR credits shall be retired prior to publication of the PDS of the relevant reporting year. This timing ensures credits are used contemporaneously with emissions.

4.8.1 ABATEMENT PRINCIPLES

To meet obligations under the ART and to claim Net Zero Achieved status, the organisation shall employ the use of high-quality CDR credits to neutralise residual emissions.

To determine eligibility for use, each CDR project is assessed against the six following criteria on a pass/fail basis:

CRITERION	DESCRIPTION	RATIONALE
1. Additionality	Project must be: – Regulatory Additional (not required by law) – Financially Additional (not viable without project revenue) – Environmentally Additional (reductions exceed baseline)	Foundational condition for a project to be earn a carbon credit.
2. Permanence	Emissions removals must be durable with minimal reversal risk	
3. Verifiability	Must be independently audited and transparently monitored and reported	All carbon projects must be verified.
4. Avoidance of Leakage	Project must not displace emissions to other areas	
5. Co-impacts	Project must not cause any documented negative social, environmental, or economic impacts	Negative co-impacts cannot be offset.
6. Registry Transparency	Credits must be serialised and publicly retired in a recognised registry within 120 days of the end of the relevant reporting year	All carbon projects must be able to have proven ownership.

While high quality CDRs should pass all six criteria independently, some CDRs, such as human-induced regeneration, have significant reversal risks that undermines their permanence. Where a CDR fails on the permanence criterion, associated reversal risk shall be mitigated through addressing the requirements of 4.8.3.

4.8.1 APPROVED METHODOLOGIES

To further ensure the integrity of net zero claims relying upon CDR credits to counterbalance residual emissions and meet ART obligations, the organisation shall procure CDRs credited via methodologies included within the Approved Methodologies Schedule maintained by CRI.

4.8.1 PERMANENCE RISK MITIGATION

All classes of carbon dioxide removal credits carry some inherent risk of reversal, particularly nature based solutions (NBS) removals. NBS removals rely upon biological processes to capture CO_2 and store it within terrestrial and marine ecosystems and include:

– Afforestation & Reforestation
– Soil Carbon Sequestration
– Blue Carbon (e.g. coastal ecosystem restoration)

These NBS removals shall be considered to have failed the permanence criteria by default. Longtail impermanence risk over a 100 year time horizon from the use of lower durability CDRs may be compensated for through concurrent and equivalent retirement of durable carbon dioxide avoidance (CDA) credits.

a) Where uninsured CDR credits that fail the permanence criteria (e.g. NBS) have been retired by the organisation, an equivalent volume of high quality durable carbon dioxide avoidance credits shall be procured and retired.

b) Where in-kind insured CDR credits that fail the permanence criteria have been retired by the organisation, the organisation shall procure and retire an equivalent volume of high quality durable carbon dioxide avoidance credits when the insurance policy has:
   – expired without renewal; or
   – been cancelled.

As CDA credits are employed only to mitigate risk for the permanence criterion of the CDR credit they supplement, the organisation shall procure CDA credits that:

c) address criteria two through six (4.8.2);

d) are credited by a CCP included within the **Approved Carbon Crediting Programs Schedule** maintained by CRI; and

e) are credited under the methodology categories of:
   – non-industrial energy efficiency;
   – renewable energy;
   – ozone depleting substance destruction;
   – industrial N_2O abatement; or
   – orphaned well remediation.

4.8.1 CREDIT REVERSAL

Any reversal of historically retired CDRs nullifies the integrity of prior net zero claims made by the organisation. This risk may be mitigated through the procurement of in-kind insured CDRs.

a) Where uninsured CDRs have been retired by the organisation, they shall:
   i) Monitor all retired CDRs for reversals for a period of 100 years, or until any future reversal would be explicitly accounted for within the national inventory of a Party to the Paris Agreement with a net zero target year; and
      Note: the transfer of reversal liability is valid only if the host country's national inventory utilises monitoring methodologies with sufficient temporal and spatial resolution to detect and account for the reversal event within the specific CDR project boundary.
   ii) in the event of a reversal, procure and retire replacement CDRs equivalent to the reversed amount to maintain the validity of the net zero claim.

b) Where uninsured CDRs guaranteed through use of buffer pools managed by carbon crediting programs (CCP – e.g. VCS, Gold Standard) or other related entities have been retired by the organisation, they shall:
   i) monitor for official notices from the CCP or publicly available credible evidence (e.g. peer reviewed academic studies, regulatory notices, reports from CDR rating agencies) indicating that the buffer pool is insufficient to cover known reversals; and
   ii) in the event the CCP fails to confirm successful retirement and replenishment of the buffer pool within 365 days of identification of such evidence, consider the associated CDRs as reversed and procure and retire replacement CDRs equivalent to the amount affected by the insolvent buffer pool.

c) Where in-kind insured CDRs have been used, the organisation shall consider these as uninsured CDRs subject to requirements of (a) and (b) when the policy:
   i) has expired or been cancelled without renewal; or
   ii) excludes coverage for a reversal event upon its occurrence.

   Note: CDRs insured with a cash settlement insurance policy, where reversed or invalidated removals are reimbursed the monetary value of the credit, are subject to the requirements of (a) and (b).