BLOOM ESG: CIRCULARITY STANDARD

A Verified Framework for Circular Decarbonisation and Scope 3 Impact Accounting

Bloom ESG

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1. Purpose and Scope

1.1. This Standard defines the principles, eligibility criteria, and methodological requirements under which Bloom ESG issues and manages low-carbon IT and low carbon materials certificates on the Bloom Registry.

1.2. Low-Carbon IT Certificates and Low-Carbon Materials Certificates represent verified environmental attributes that quantify the carbon intensity and climate benefits of IT asset and materials circularity.

1.3. All certificates are generated from activities that meet the *Bloom Estimated Avoided Emissions and Emissions Intensity from Circular Re-use and Recycling Activities (V3.1, Nov 2025)* and are verified under ISO 14064-1 and ISO 14064-3.

1.4. EACs currently supported on the registry are collectively called Low-Carbon IT Certificates. There are three four of CE Certificates:

- **I-TEC Certificates** (IT Asset Re-Use Certificates): Represent the carbon intensity of 1 kilogramme or 1 unit processed for reuse. Certificates represent verified emissions intensity from refurbished and recycled IT hardware.

- **Avoided Emissions Certificate (Reuse):** Represent the avoidance of 1 metric ton of CO_2e specifically from electronics re-use. These certificates directly quantify the climate benefit of extending product lifecycles, reducing demand for virgin material production. This represents the climate benefit, reinforcing both environmental and supply-chain integrity.

- **I-MAT Certificates** (Materials Recycling Certificates): Represent the verified proof that 1 tonne of materials has been produced from recycled rather than mined raw materials

- **I-MAT AE Certificates** (Materials Avoided Emissions Certificate): Represent the avoidance of 1 tonne of CO_2e from materials recovery activity. Aligned with the ICVCM Core Carbon Principles.

1.5. Collectively, these certificates form the Bloom ESG Low-Carbon IT Certificate System, designed to:

- Incentivise verifiable circular-economy actions;
- Substantiate Scope 3 decarbonisation performance using integrity-aligned Environmental Attribute Certificates (EACs); and
- Provide transparent, auditable evidence of avoided and reduced emissions.

1.6. Version Control and Updates: This guide is periodically updated to reflect changes in registry policies, processes, or standards. Users should refer to the latest version to ensure compliance with current requirements.

Version	Date	Adjustments
V1.0	01/11/2025	
V1.1	01/12/2025	Circularity methodology updated ISO certification
V1.2 (Current)	19/06/2026	Terminology updated to Low-Carbon IT Certificates. Four certificate types confirmed. Principles of Integrity updated to CNZS V2.0 equivalents. Claims framework (Section 7) fully reworked per CNZS V2.0. SBTi reference updated from draft to published standard.

1.1 Support and Contact Information

For assistance with registry operations, users may contact the registry support team. The registry support team can be contacted at registry@bloom-esg.com.

2. Principles of Integrity

Bloom ESG applies the four integrity criteria for energy and commodity EACs from the SBTi Corporate Net-Zero Standard V2.0, published June 2026:

Principle	Bloom ESG Implementation	CNZS V2.0 Equivalent
Accuracy	For carbon intensity certificates (I-TEC, I-MAT), each certificate reflects the verified emissions intensity of the processing activity, calculated using the Bloom V3.1 Methodology with facility-specific data and auditable records. For avoided emissions certificates (I-MAT AE, Avoided Emissions Certificate Reuse), each certificate reflects the measured delta between a credible baseline and the verified project activity..	C25/C26 verified quantification
Unique Attribution	Only one certificate class may convey the same GHG attribute for a given activity or asset batch. Processor and registry contracts prohibit double issuance or cross-claiming.	C28, no double counting
Verifiability	All activity data and emission factors are subject to ISO 14064-accredited third-party verification, ensuring traceable evidence and auditable chain-of-custody.	C28.2, independent assurance

Principle	Bloom ESG Implementation	CNZS V2.0 Equivalent
Traceability	The Bloom Registry maintains immutable digital records linking assets, facilities, calculations, and retirement events, ensuring full lifecycle traceability.	C28.1, secure registry

3. Eligible Activities

3.1 Applicable activities include the collection, sorting, refurbishment, re-use, and recycling of IT and electronic assets and of secondary materials recovered from such assets.
3.2 Facilities must demonstrate:
3.2.1 Quantifiable outputs (mass or asset count);
3.2.2 Recorded electricity and fuel consumption;
3.2.3 Compliance with recognised environmental standards (e-Stewards, R2, ISO 14001).
3.3 Activities shall comply with applicability conditions defined in *Bloom V3.1 Methodology*.

4. Certificate Types

Certificate Type	Description	Unit / Metric
I-TEC (IT Asset Recycling Certificate)	Verified emissions intensity achieved through refurbishment of IT hardware. Represents the carbon intensity per kilogramme of refurbished assets.	k**g**CO_2e / kg asset
Avoided Emissions Certificate (Reuse)	Quantifies the kgCO_2e avoided from IT asset reuse, representing lifecycle extension benefits.	kgCO_2e avoided
I-MAT (Materials Recycling Certificate)	Verified proof that 1 kg of material has been produced from recycled rather than mined raw materials.	tonne of recycled material
I-MAT AE (Materials Avoided Emissions Certificate)	Quantifies the avoidance of 1 kg of CO_2e from materials recovery activity. Aligned with ICVCM Core Carbon Principles.	kgCO_2e avoided

5. Quantification Methodology

Emission calculations follow the *Bloom Estimated Avoided Emissions and Emissions Intensity from Circular Re-use and Recycling Activities (V3,01 December 2025)*.

5.1 Avoided Emissions Certificates

5.1.1 The methodology defines the project boundary as all physical sites where waste is collected, sorted, recycled, or refurbished, as well as the upstream virgin material production chain. Baseline emissions represent what would occur in the absence of the project, specifically, that materials and components would not be recovered from waste and instead would be produced entirely from virgin inputs. This includes emissions from mining, refining, processing, and manufacturing. Baseline emissions are calculated by multiplying the quantities of materials theoretically recycled or refurbished by their respective virgin-production emissions factors, sourced from authoritative datasets such as DEFRA, EPA, IEA, and IPCC. These factors are reviewed annually, and quantities of recovered materials are measured directly at facilities to ensure accuracy.

5.1.2 Project emissions reflect the actual emissions generated during the recycling or refurbishing processes. These include energy consumed during dismantling, shredding, smelting, and other material recovery activities. Where detailed process-level data is available, emissions are calculated by combining energy consumption for each process with the corresponding fuel- or electricity-based emissions factors. If such data is unavailable, facility-level total energy and fuel consumption are allocated proportionally to materials processed. For cases where E-waste (or other commodities or assets) is only sorted at the project facility but processed further by third parties, emissions are estimated using standardized energy consumption factors for asset or commodity processing. Together, these calculations allow comparison between baseline and project emissions, forming the basis for quantifying avoided emissions achieved through recycling and refurbishment activities.

5.2 IT Reuse Carbon Intensity Certificates (I-TECs)

5.2.1 The methodology requires projects monitor and report the greenhouse gas emissions generated directly from recycling and refurbishing operations. Process emissions intensity reflects the carbon performance of these activities by measuring the emissions produced per unit of material or asset processed, for example, tCO_2e per kilogram of IT hardware refurbished or $kgCO_2e$ per kg of IT hardware refurbished. To calculate this metric, projects must collect data on total process emissions (from electricity use, fuel consumption, and other Scope 1 and 2 sources) and the total quantities of materials or assets processed. Emissions intensity is then expressed as the ratio of total emissions to output volume.

5.2.2 Monitoring and reporting must follow consistent boundaries, emission factors, and methodological assumptions to ensure comparability across years and facilities. All data, calculations, and assumptions must be documented in line with ISO 14064-1 principles of transparency,

consistency, and accuracy. Reporting should include both total avoided emissions achieved by the project and the calculated emissions intensity for each major activity type. Where carbon intensity certificates are issued, all supporting datasets, emission factors, and calculation methods must be retained for verification.

5.3 Emission-factor hierarchy applies to all material and asset categories. All emissions factors must be from recognized and public sources.

5.4 All calculations must maintain consistent system boundaries and data sources across reporting periods.

6. Issuance and Registry Operation

6.1 Each Low-Carbon IT Certificate is assigned a unique identifier and metadata record: project name, facility ID, vintage, methodology version, verification body.

6.2 Certificates are minted, transferred, and retired exclusively on the Bloom Registry (https://bloom-esg.com/registry).

6.3 Verification under ISO 14064-3 is required prior to registration.

7. Claims and Use Guideline

7.1 Not all Low-Carbon IT Certificates and Low-Carbon Materials Certificates can be used to substantiate progress against SBTi-aligned Scope 3 targets. The following table sets out what each certificate type may and may not be used to claim:

Certificate Type	Scope 3 target progress (Cat 1/2)	System contribution claim	Circularity / materials claim	SBTi CNZS V2.0 aligned
I-TEC	Yes, carbon intensity EAC	Yes	No	Yes (C21–C28)
I-MAT	Yes, carbon intensity EAC for materials recovered	Yes	Yes	Yes (C21–C28)
I-MAT AE	No	No	Yes	No
Avoided Emissions Certificate (Reuse)	No	No	Yes	No

I-MAT AE and Avoided Emissions Certificates (Reuse) are governed by the ICVCM Core Carbon Principles and are not SBTi target implementation instruments. They may be used for circularity reporting, value chain disclosures, and voluntary sustainability claims, but not for progress against SBTi Scope 3 targets.

7.2 Approved claim statements

CNZS V2.0 distinguishes between three claim types. The correct claim depends on which application the certificate holder has used.

I-TEC: Activity-level claim (Application 1 — purchased with refurbished hardware)

Use where the corporate has procured refurbished IT hardware alongside the I-TEC. The lower carbon intensity flows into the physical GHG inventory.

"Bloom I-TEC retired. [X] kg of IT hardware verified at [Y] $kgCO_2e/kg$ carbon intensity, processed through a certified refurbishment pathway, ISO 14064-verified. Emission factor applied to Scope 3 Category [1/2] physical GHG inventory."

I-TEC: System contribution claim (Application 2 — certificate only)

Use where the corporate has purchased I-TECs without the associated hardware. Reported separately from the physical GHG inventory.

"Bloom I-TEC retired as a system contribution claim. [X] kg of IT hardware verified at [Y] $kgCO_2e/kg$ carbon intensity, supporting the IT hardware refurbishment ecosystem. Reported separately from the Scope 3 physical GHG inventory in accordance with CNZS V2.0 C24."

I-MAT: Activity-level or system contribution claim

"Bloom I-MAT retired. [X] kg of materials recovered through a certified circular recovery pathway, verified at [Y] $kgCO_2e/kg$ carbon intensity, ISO 14064-verified. Emission factor applied to Scope 3 Category [1/2] physical GHG inventory."

I-MAT AE: Avoided emissions claim

"Bloom I-MAT AE retired. [X] tCO_2e avoided through certified materials recovery activity, ISO 14064-verified and aligned with ICVCM Core Carbon Principles."

Avoided Emissions Certificate (Reuse): Avoided emissions claim

"Bloom Avoided Emissions Certificate (Reuse) retired. [X] $kgCO_2e$ avoided through certified IT asset reuse, ISO 14064-verified and aligned with ICVCM Core Carbon Principles."

7.3 Temporal Scope of I-TEC Claims

I-TECs are annual carbon accounting instruments. They do not carry a useful life and are not associated with the operational lifespan of a hardware asset. The

temporal scope of an I-TEC claim is the reporting year in which the certificate is retired.

For Application 1 (activity-level, purchased with refurbished hardware), the I-TEC evidences the verified carbon intensity of a specific hardware procurement for the reporting year in which that procurement occurred. The lower emission factor flows into, for example, the Scope 3 Cat 1/2 physical GHG inventory for that reporting year. A new procurement event in a subsequent year constitutes a new Scope 3 activity and requires a new I-TEC for that batch.

For Application 2 (activity pool-level, certificate only), the I-TEC constitutes an annual system contribution claim. A corporate holding IT hardware on its balance sheet (whether procured as refurbished or not) may purchase and retire I-TECs each reporting year to support a credible, separately disclosed contribution to the IT refurbishment ecosystem. This is analogous to the annual purchase of Renewable Energy Certificates against electricity consumption: one certificate per reporting year, retired in the Bloom Registry as the evidence of that year's contribution.

Certificate holders shall not retire a single I-TEC against multiple reporting years. Each reporting year requires a separate retirement event recorded in the Bloom Registry.

7.4 Claim restrictions

Certificate holders shall not:

- Claim that I-TECs or I-MAT certificates reduce emissions. They convey a verified carbon intensity attribute. The emission factor may reduce the reported inventory figure, but the certificate itself does not reduce emissions.
- Claim that I-MAT AE or Avoided Emissions Certificates (Reuse) contribute to SBTi Scope 3 target progress.
- Use any certificate to make a neutralisation or offset claim.
- Claim the same environmental attribute twice (double counting).

8. Governance and Verification

8.1 Independent VVBs validate and verify projects per ISO 14064.
8.2 The Registry and issuance process undergo independent annual assurance.

9. Data Transparency and Audit Trail

9.1 All issued and retired certificates are publicly listed in the Bloom Registry.
9.2 Each record links to its underlying data and verification report.
9.3 Methodology and emission-factor updates are published annually.

10. Alignment with Global Frameworks

This Standard aligns with:

- ISO 14064-1 & 14064-3 (GHG Quantification & Verification);
- UN CDM and VERRA methodologies (SSC-NM072, AMS-III.BA, AMS-III.AJ);
- SBTi Corporate Net-Zero Standard V2.0 (published June 2026), criteria C21 through C28, applicable to I-TEC certificates only;
- ICVCM Core Carbon Principles and ICROA Code of Best Practice.

11. Certificate Validity and Retirement

11.1 Each certificate is valid for three (3) years following the end of its activity vintage year.
11.2 Upon expiry, certificates are automatically retired by the Bloom Registry and marked “Retired (Expired)”.
11.3 Expired certificates remain visible in the public ledger for audit transparency.
11.4 Detailed operational procedures are defined in the *Bloom Registry User Guide (December 2025)*.

Annex A – Sample Certificate Metadata

Field	**Description**
Certificate ID	Unique identifier
Certificate Type	Certificate Type: I-TEC / Avoided Emissions Certificate (Reuse) / I-MAT / I-MAT AE
Project Name	Registered facility or programme
Facility ID	Linked to audited entity
Vintage	Year of activity
Baseline Type	Virgin manufacture (applicable to avoided emissions certificates only; not applicable to I-TEC carbon intensity certificates)
Emission Factor Source	DEFRA 2024 / EPA WARM 2023 / IPCC v6
tCO_2e Value	Quantified impact
Verification Body	ISO-accredited VVB

Field	Description
Claim Eligibility	Scope 3 use only; non-offset
Status	Issued / Transferred / Retired / Retired (Expired)