



# TRACEMET

## TraceMet Report:

# Certification Scheme

**TraceMet – Traceability for sustainable metals and minerals**

Project time: December 2019 to January 2021

- TraceMet is part of and financed by Swedish Mining Innovation, the strategic innovation program for the Swedish mining and metal mining industry, a joint venture by Vinnova, Formas and the Swedish Energy Agency.
- Svemin, the industry organization for mines, mineral and metal producers in Sweden, is TraceMet's project owner and initiator.

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# TraceMet Certification Scheme

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# 1. Application, notes and limitations for certification scheme

## 1.1 Application

The purpose of this certification scheme is to enable stepwise relaying of environmentally related data throughout the steel and copper supply chain, from mining to component producer (for copper) and to automotive industry OEM (for steel).

The certification scheme verifies that environmentally related data is valid with regards to requirements specified according to agreements met in the TraceMet projects [1] and that the data is correctly copied onto a blockchain.

The blockchain works as vehicle for uncompromised relaying of the certified data throughout the supply chain.

### **The certification scheme results in:**

- A verified combined claim regarding a specific time frame and production volume of steel or copper concerning the:
  - claimed specific production volume;
  - CO<sub>2</sub>eq cradle to gate carbon footprint per tonne;
  - in percentage expressed ratio of recycled content, and
  - a unique ID of the blockchain-entity for which the certificate is valid.
- The unique ID of the blockchain-entity addresses:
  - two numerical figures with associated units:
    - a quantitative expression for the carbon footprint CFP CO<sub>2</sub>eq per tonne material, and
    - the percentage of recycled content.
  - a verification document that in accordance with ISO/IEC 17029 [8], verifies that the combined claim conforms with:
    - TraceMet Product Category Rules PCR for steel and copper carbon footprint [1], and
    - TraceMet Specific Methods, Assumptions and Data (SMAD) for the pilot based on the TraceMet PCR for steel and copper respectively [1].

## 1.2 Notes

The Product Category Rules (PCR) and the TraceMet Specific Methods, Assumptions and Data (SMAD) documents are based on methodologies specified in openly available standards but adds the further details that are required by these standards. The contents of standards and detailed specifications are not repeated in this certification scheme. This is to avoid confusion. Any updates in standards, PCR or SMAD needs to be acknowledged at the moment when verifying whether a claim conforms with the requirements of a valid TraceMet certificate.

## 1.3 Limitation

The certification scheme does not verify that the data on the blockchain is uncompromised but relies on the functionality of the blockchain for this.

Due to current limitations in reporting time of carbon footprint data there is generally a lag in the reporting time from 3 months and up. This implies that the TraceMet reported claim onto the blockchain has such time lag. This in turn implies that the physical product sold during a time period during a valid certified claim is generally related to a claim to be certified in a future. Hereby a

customer will always receive a delayed certificate. During the project this delay has been thoroughly assessed and its necessity debated. The necessity is due to that data acquisition and data preparations, as well as calculations and compilations as well as reporting to a large extent is still made manually. The transformation of these work tasks from requiring much manual and experts' intellectual efforts into digitization and automation is still to be realized. The TraceMet project was performed at the early beginning of this transformation period. The certification scheme is prepared to be made either on the manually performed procedures or on the specifications, algorithms and data in a digitized automated information system. The delay is intended to be gradually shorter, to practically vanish into real time reporting as digitization encompasses the whole reporting information handling. The verification procedures of claims as described here does not yet encompass verification of digitized automatic calculations of data throughout a supply chain. However, it is intended that that such are verified in the same way as described in this document, but then with a stricter conformance with the standard ISO 14033 – Quantitative environmental information [3], since this standard is built on the basis of an information system architecture for this type of reporting.

## 2. Certification framework

The TraceMet certification framework is a combination of requirements and guidelines provided to those who intends to make a verifiable claim according to the agreed requirements compiled in the Product category rules (PCR) [1] and its attached Specific Methods, Assumptions and Data (SMAD)[1]. This certification framework verifies that such a claim conforms with the agreed requirements and that it is internally consistent, as well as is consistent with the mass volume and balance of the claimed chain of custody (CoC).

The certification scheme is established on existing standards [2, 3, 4, 5, 6, 7, 8]. These standards specify the methodology for calculating the carbon footprint [6] based on life cycle assessment (LCA) [4, 5] and how to specify the boundaries and other methodological and data specifications [1], as well as report the LCA based on environmental product declarations [2]. For the pilot study a European standardized Product Category Rules (PCR) for the construction sector [7] has been used as template. For specific data claims, mainly for the claims concerning total procured and sold amounts of masses of recycled metal a standardized framework for transparency and review of data is applied [3]. The procedures necessary to verify that a carbon footprint and recycled material content claim conforms with are specified in [8]. See also Figure 5 and Annex A for full relationship between standards and certification scheme. The relationships will be presented stepwise in the following subclauses.

### 2.1 The TraceMet system for producing verifiable claims

Figure 1 shows how the acquisition and compilation of data to produce a verifiable claim is guided by the PCR and SMAD document [1].

- *Producing a verifiable claim of amount of carbon footprint on steel or copper is done in accordance with the System for producing a verifiable claim of carbon footprint as prescribed in the documents.*
- *Producing a verifiable claim of amount of % of recycled steel or copper is done in accordance with the System for producing a verifiable claim of % of recycled steel or copper as prescribed in the documents.*
- *The total Verifiable claim of carbon footprint per tonne and of % recycled material is produced as a verifiably consistent claim of the individual claims, addressing data from the*

same production time frame, the same production volume, and the same amount of purchased material.

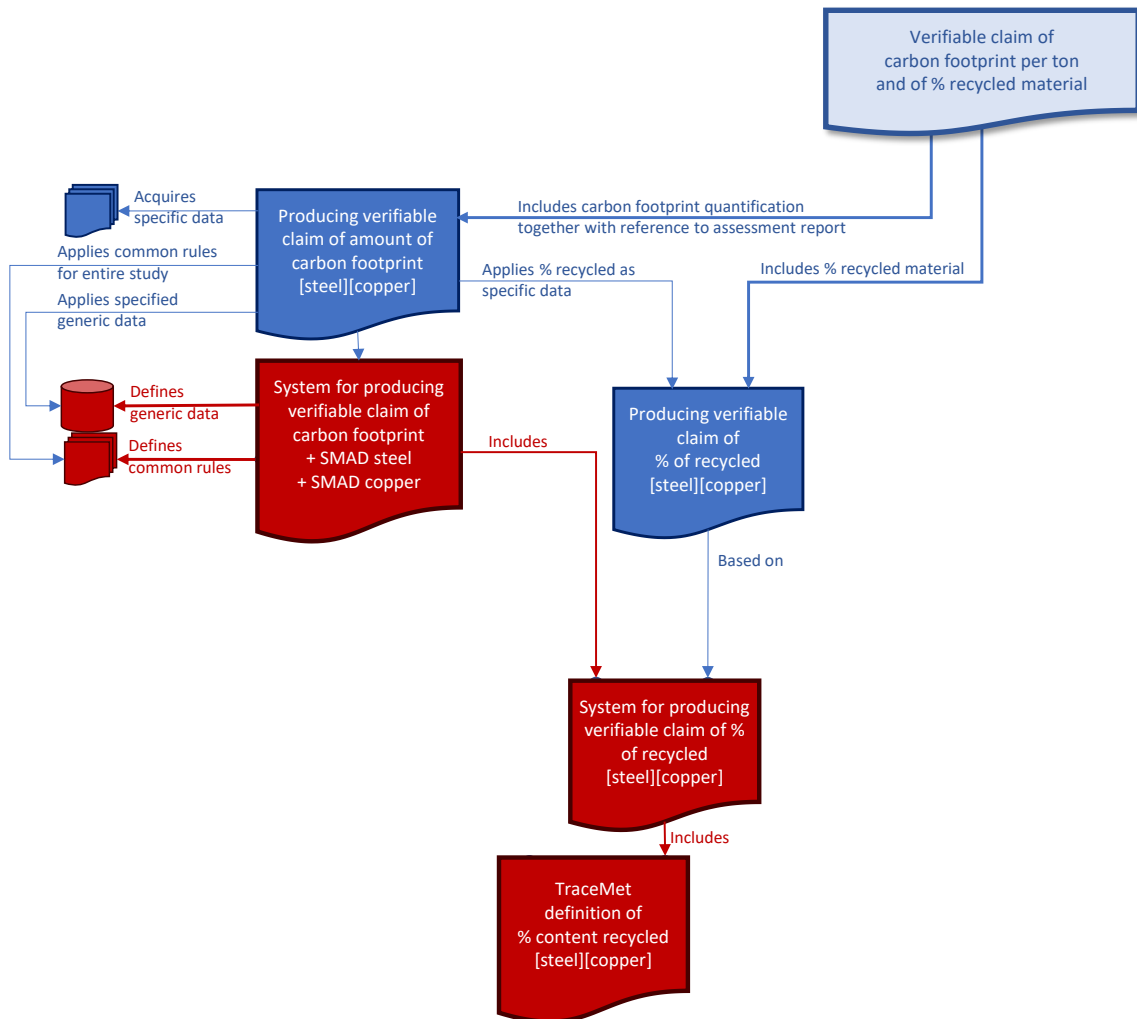


Figure 1. The TraceMet system for producing verifiable claims (see also Figure 3 for full certification scheme).

Colour code: Red represents specifications in PCR and SMAD documents [1]. Dark blue represents how to acquire data and calculate the claim. Light blue represents the claim itself.

## 2.2 The TraceMet system for verifying claims

Figure 2 represents how a TraceMet verifiable claim produced in accordance with clause 2.1 is verified.

The verification of a claim of carbon footprint is made in accordance with ISO 17029 [8]. It verifies whether:

- the claim is produced using data and methods in conformance with [1],
- the methods are used internally consistent based on the available data,
- the two parts of the claim, the carbon footprint and the ratio of recycled material, are consistently based on the data for the same amount of material and during the same time span, and
- that the calculations are consistent.

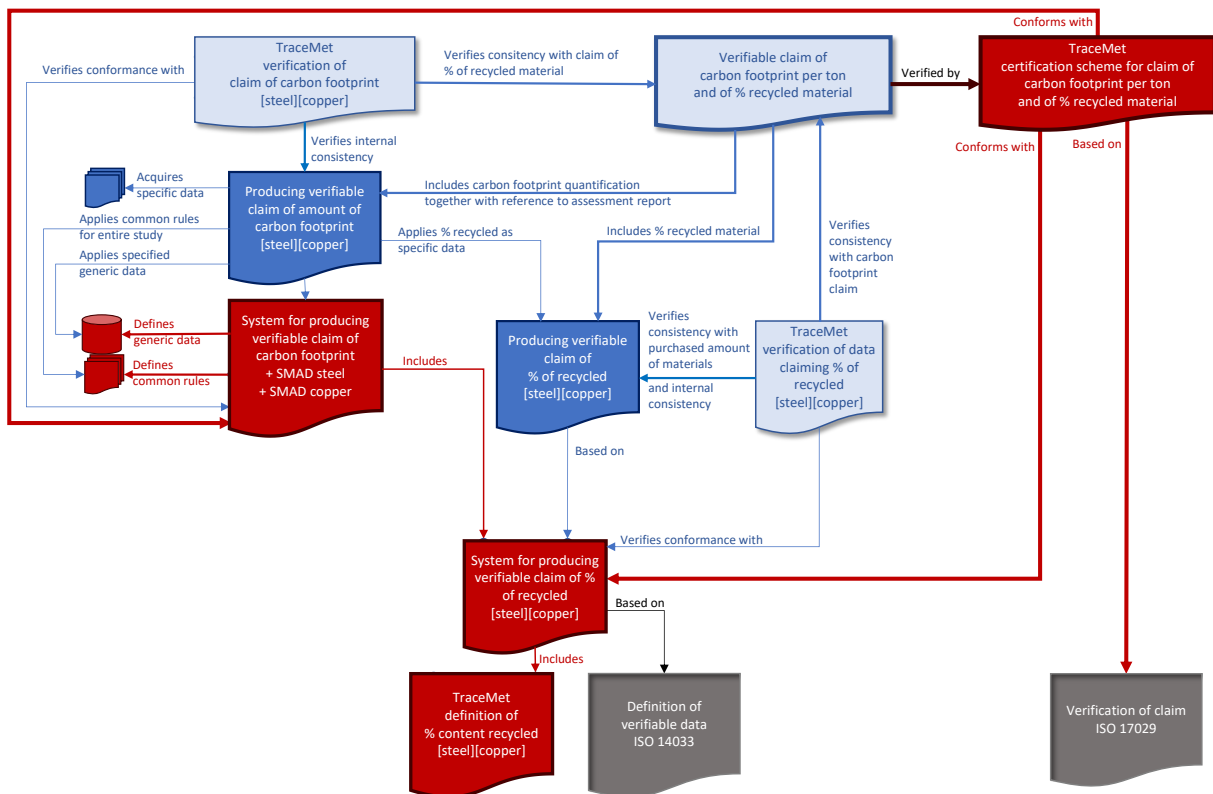


Figure 2. The TraceMet system for verifying claims (see also Figure 3 for full certification scheme). Colour code: Red represents specifications in PCR and SMAD documents [1] as well as this certification scheme. Dark blue represents how to acquire data and calculate the claim. Light blue represents the claim itself. Grey represents the standards to reference with regards to how to verify the claim (ISO 17029) [8] and how to verify acquired data (ISO 14033) [3].

The certification summarizes as a combined verification of conformance with the PCR and SMAD documents [1] and the internal consistency of how the claim, the data and the methods are acquired, calculated, compiled and applied.

For a claim to be considered as verified each of the relevant requirements of the PCR and the SMAD needs to be verified by the report supplied with the claim. This includes all data and all calculations, as well as the consistency by how calculations throughout the value chain and between GHG emissions and ratio of recycled content.

Hence a verified claim means that each and all requirements expressed in the PCR and in the relevant SMAD are transparently and understandably verified by the report supplied with the claim.

Templates based on the PCR and SMAD documents [1] are provided in Annex B.

## 2.3 The full TraceMet certification scheme

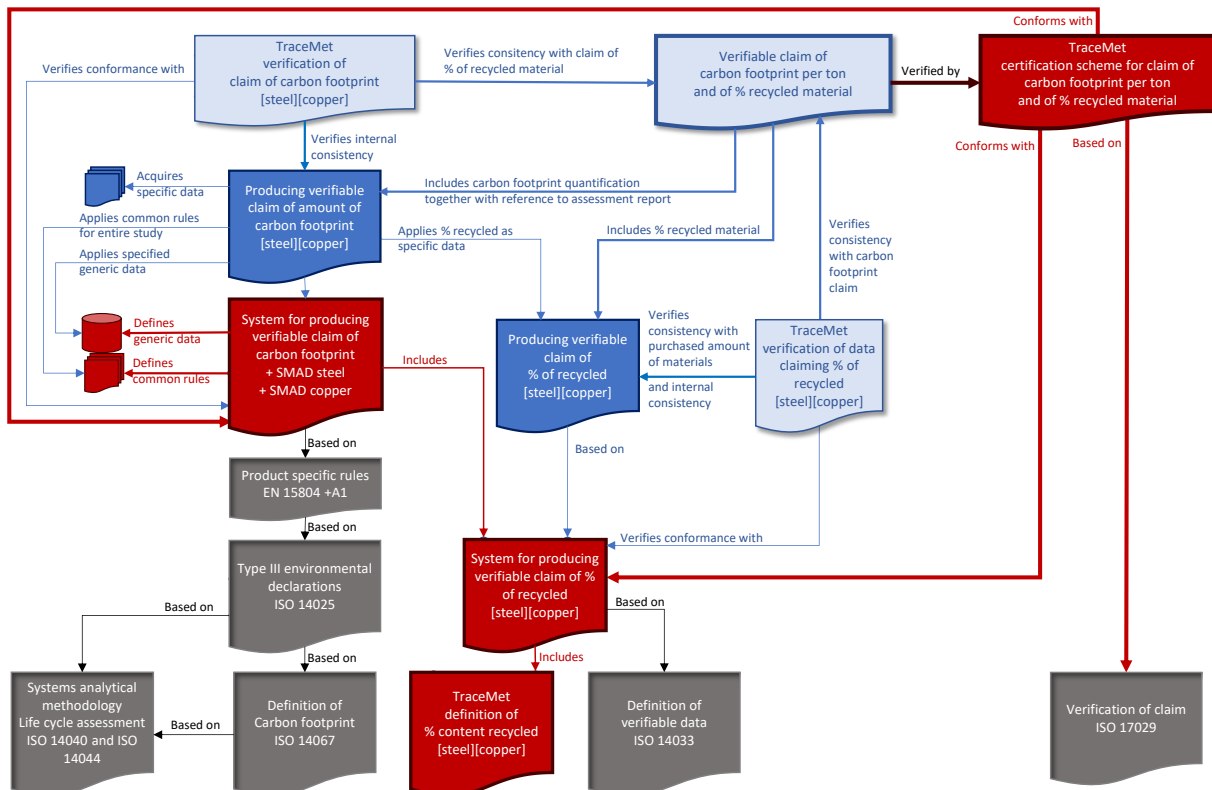


Figure 3. The TraceMet certification scheme (see Annex A for larger version of this picture). Colour code: Red represents specifications in PCR and SMAD documents [1] as well as this certification scheme. Dark blue represents how to acquire data and calculate the claim. Light blue represents the claim itself. Grey represents the standards in which the general methodologies are specified [2, 3, 4, 5, 6, 7, 8].

Clauses 2.1 and 2.2 presents the practical parts of certification scheme. Figure 5 presents how the certification scheme is based on existing standards. The carbon footprint claim is based on the standards for life cycle assessment [4, 5] and carbon footprint [6], and on the standards for environmental product declaration [2] and on a standardized product category rules [7].

Verification is of the full statement performed as described in clause 2.2, on basis of [8].

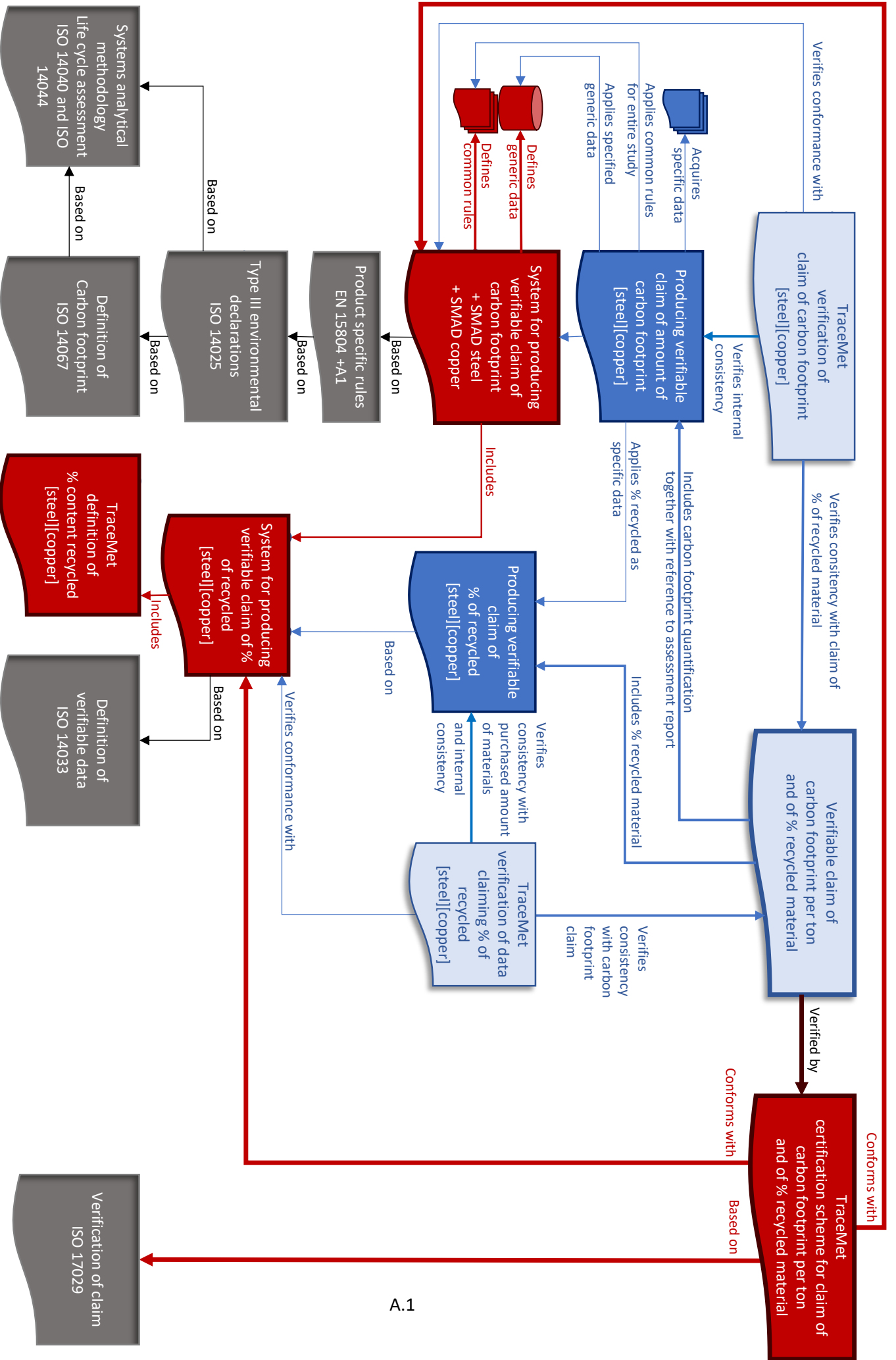
Note: The specific requirement on verifying that the total amount of chain of custody (CoC) certified material as well as CoC certified amount of recycled material is in both Figure 2 and Figure 3 referenced to ISO 14033 [3], with the intention that this verification shall be traceable to its source in either or both the financial and the production systems data sources.



## References

- [1] Hallberg, Lisa, and Dahllöf, Lisbeth; TraceMet - Calculation and Reporting Rules, IVL Report number C 580, March 2021
- [2] ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures
- [3] ISO 14033:2019 Environmental Management — Quantitative Environmental Information — Guidelines and examples
- [4] ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework
- [5] ISO 14044 ISO 14040:2006 Environmental management — Life cycle assessment — Requirements and guidelines
- [6] ISO 14067 ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- [7] CEN European Committee for Standardisation (2019), EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- [8] ISO/IEC 17029:2019 Conformity assessment — General principles and requirements for validation and verification bodies

# Annex A – The TraceMet Certification scheme



## Annex B – Verification templates

Requirements of Product Category Rules (PCR) - TraceMet	Verified by (sub-) clause # in report
2.3 System boundaries	
2.3.1 General	
2.3.2 Core processes	
2.3.3 Upstream processes	
2.3.4 Geographical boundaries	
2.3.5 Time boundaries	
2.3.6 Boundaries to nature	
2.3.7 Manufacturing of equipment and employees	
2.3.8 Boundaries to other product life cycles	
2.4 Allocation rules	
2.4.1 General	
2.4.2 Inclusion of system expansion in the production of the core CoC metal product	
2.5 Cut-off rules	
2.6 Data quality rules	
2.6.1 Specific data	
2.6.2 Rules for generic data	
2.6.3 Selection of data	
2.6.4 Potential climate change impact, carbon footprint	
3 Definitions of recycled content and carbon footprint	
3.1 Recycled content	
3.1.1 Definition of pre- and post-consumer scrap	
3.1.2 Definitions of recycled content	
3.2 Carbon footprint	
3.2.1 Carbon footprint for the final core CoC metal product	
3.2.2 Carbon footprint for the core CoC primary metal or primary metal product	
3.2.3 Carbon footprint for the core recycled metal or recycled metal product	
3.2.4 Carbon resource management carbon footprint	

Requirements of Specific Methods, Assumptions and Data (SMAD) for the pilot based on the TraceMet PCR Production of Steel, hot rolled coil		Verified by (sub-) clause # in report
2 Validity		
3 Method rules		
3.1 General data collection instruction		
3.1 Allocation rules for steel		
3.1.1 (LKAB) Producer of iron pellets		
3.1.2 (SSAB) Steel producer of hot rolled coil		
4 Data and assumptions		
4.1 Recycled content		
4.1.1 LKAB iron pellets production		
4.1.2 SSAB steel production		
4.2 Carbon footprint		
4.2.1 LKAB iron pellets production		
4.2.2 SSAB steel production		

Requirements of Specific Methods, Assumptions and Data (SMAD) for the pilot based on the TraceMet PCR Production of Copper wire rod		Verified by (sub-) clause # in report
2 Validity		
3 Method rules		
3.1 General data collection instruction		
3.2 Allocation rules for copper		
3.2.1 Allocation rules for copper cathode produced at Boliden's smelting facility Rönnskärsverken		
3.2.2 Allocation rules for copper wire rod at Elektrokoppar		
3.3 Mass-balance calculations of copper		
3.3.1 Mass-balance calculations at Boliden for production of copper cathode		
3.3.2 Mass-balance calculations at Elektrokoppar for the production of copper wire rod		
4 Data and assumptions		
4.1 Recycled content		
4.1.1 Boliden copper cathode production		
4.1.2 Elektrokoppar copper wire rod production		
4.2 Carbon footprint		
4.2.1 Boliden copper production		
4.2.2 How total carbon footprint is calculated		
4.2.3 Elektrokoppar copper wire rod production		

Verifying correct copying of claim from report to blockchain field		
Report title		
Claim title	Value read in report	Value read from blockchain
[example: CO2eq per tonne]		
[example: % recycled content]		