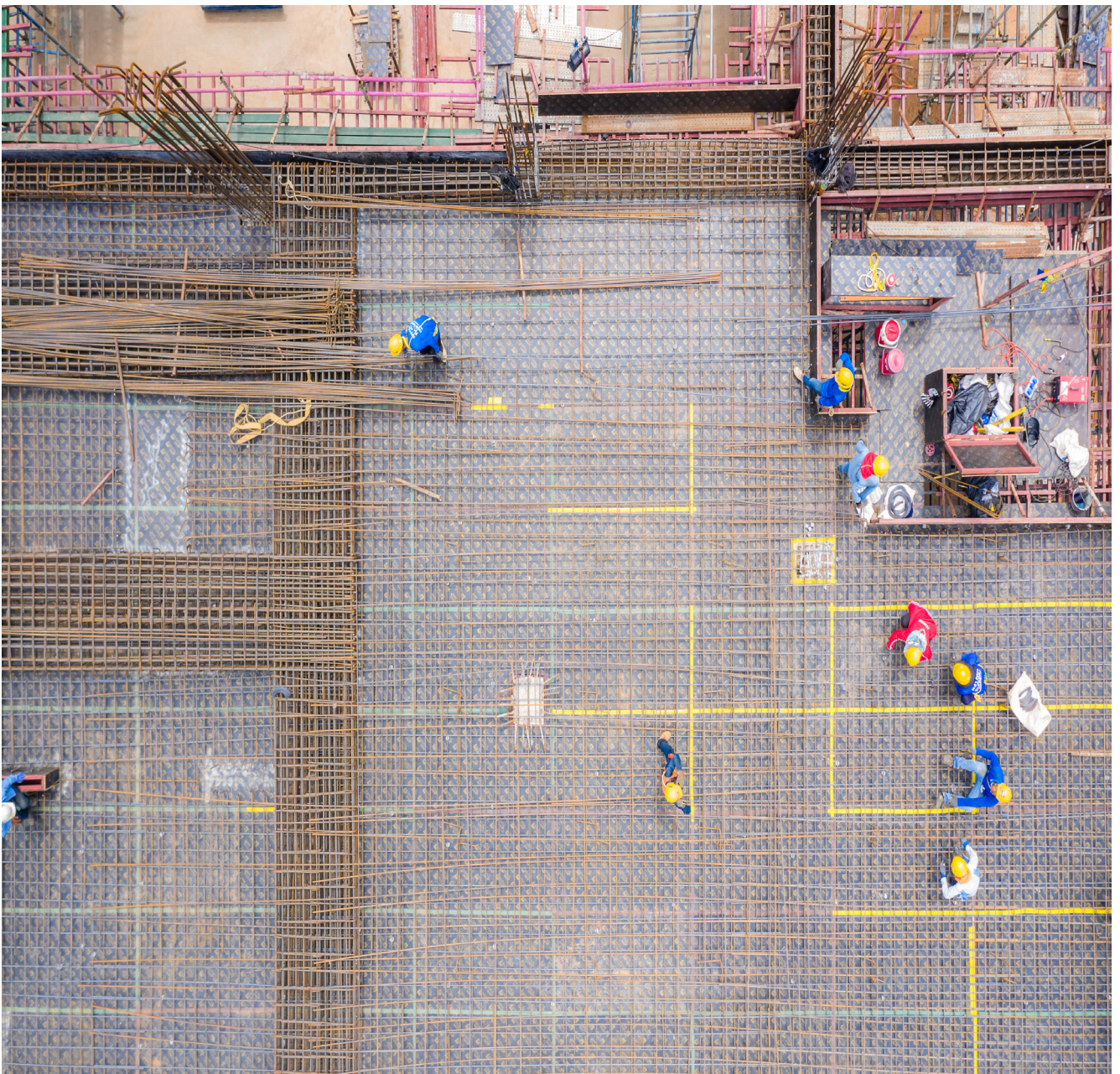


# GUIDANCE FOR PCR HARMONIZATION

Driving consistency in the greenhouse gas accounting system  
for steel, cement and concrete products

April 2024



# Contents

About	3
The rationale for harmonization of standards	5
Guidance for PCR harmonization	7
1. General guidance	8
2. Technical recommendations for product category rule harmonization	10
3. Glossary	17
Annex 1	23
1.1. Accelerating the availability of specific data throughout the value chain	23
1.2. EPD machine readable digital formats	23
1.3. Reference standards	24
1.4. Sub-PCRs and complementary-PCRs	24
Annex 2	26
2.1. Contributors to this document	26
References	28

## About

The Clean Energy Ministerial Industrial Deep Decarbonisation Initiative (IDDI), hosted by UNIDO, is a global coalition of governments and private sector organizations working to create an enabling environment for deep decarbonization of heavy industry, starting with steel, cement and concrete.

The IDDI aims to achieve this by

- Stimulating demand for low and near-zero emission materials through green public procurement commitments
- Harmonizing emissions accounting methodologies
- Endorsing definitions for low and near zero emission materials

The IDDI Secretariat aims to update this document periodically to align with industry best practice and to support reporting as required to meet Pledge Levels 1 and 3 of the IDDI [Green Public Procurement Pledge](#). Read more about the IDDI [here](#).

Contact: [iddi@unido.org](mailto:iddi@unido.org).

## Version history

Number	Date	Description
Version 1	April 2024	First published version of the IDDI Guidance for PCR Harmonization

## Acknowledgements and disclaimer

This guidance document was developed based on a series of discussions held in 2023 and 2024 involving representatives from IDDI member governments and partner experts. A list of contributing organisations can be found in [Annex 2](#).

**The contents of this document are not to be construed as endorsements or reflective of the official positions of member governments or the contributing organizations.**

©Industrial Deep Decarbonisation Initiative, 2024

Cover photo: ©AdobeStock

Design: Small World Stories



# The rationale for harmonization of standards

Advance procurement commitments for low-emission or 'green' products are central to the business case for investment in industrial decarbonization. By their nature, green procurement commitments will be underpinned by robust information about the environmental impact of products. However, existing standards for calculating this impact fail to generate consistent results due to misalignments and gaps between emissions accounting frameworks.

Based on work carried out in 2022 and 2023, this document provides technical recommendations to update and harmonize emissions accounting standards for steel, cement and concrete products. If adopted, these recommendations will improve the life cycle assessment (LCA) process for these products and create greater interoperability of environmental impact data in environmental product declarations (EPD).

Pledge Level 1 of the IDDI's Green Public Procurement (GPP) Pledge campaign commits participating governments to require disclosure of the embodied emissions<sup>1</sup> of procured steel, cement and concrete products. The reporting must be demonstrated with Type III EPDs, or other independently verified reports covering the same aspects as the EPD, and by 2030 it is expected that disclosure requirements will be based on a methodology agreed on across IDDI members. This document supports this process and the implementation of the GPP Pledge, with a specific focus on the harmonization of emissions accounting standards that support the production of EPDs.

The challenges of harmonizing emission accounting standards are not unique to steel, cement or concrete. The proposals in this document may provide value for other construction and non-construction material sectors, and as reference material for sectors in the process of developing a first set of product category rules (PCR).

## Background to product-level emission accounting

Product Category Rules (PCRs) provide specific instructions for:

- Calculating the environmental impact of a product over its life cycle
- Disclosing this information in an environmental product declaration (EPD)

Life cycle assessment (LCA) data disclosed in EPDs can in turn be used to compare like- and substitutable-products in project design and procurement processes, and can be integrated into whole life carbon (WLC) assessments of complex products such as buildings or automobiles. Type III environmental declarations (ISO 14025:2006<sup>2</sup>) are EPDs providing quantified environmental data using predetermined parameters that are based on ISO 14040:2006<sup>3</sup> and ISO 14044:2006.<sup>4</sup> Type III EPDs require independent verification prior to publication and are already used in some regions for planning, green procurement and other 'Buy Clean' style policies.

Depending on scope, PCRs can enable comparison of the global warming potential (GWP) of like-products, typically expressed as kilograms of carbon dioxide equivalent per declared unit of product. EPDs also contain information about other environmental impact categories such as freshwater use, eutrophication, and ozone depletion. Whilst lowering the GWP of products is generally the priority for green procurement, EPDs allow buyers to consider multiple impact categories to prevent perverse outcomes when pursuing emission reductions.

There are other product level emissions accounting standards not covered by this guidance. For example, ISO 20915:2018 is a life cycle inventory methodology used to quantify environmental data for steel products based on the principles and rules set out in ISO 14040 and ISO 14044. ISO 20915 covers the same criteria as the PCRs addressed by this guidance, provides valuable insights, and should be considered for the development of PCRs for steel products. ISO 20915 has not been reviewed by the IDDI but may be in the future. ISO 20915 is identified in the IEA *Emissions Measurement and Data Collection for a Net Zero Steel Industry* (2023) report and the IDDI is working closely with the IEA to ensure that work by both organizations on the harmonization of emissions accounting methodologies is aligned.

# Guidance for PCR harmonization

This document provides a robust starting point for the process of harmonizing the following PCRs:

- **ISO 21930:2017** Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services.
- **EN 15804:2012+A2:2019** Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

These PCRs set out requirements for calculating the environmental impact of construction products and are supported by sub-PCRs (also called 'complementary-PCRs' in the European Committee for Standardization (CEN) framework)<sup>5</sup> for steel, cement and concrete, which add additional LCA requirements.

The content of this document is split into two categories (1) general guidance, which sets out broad aims for PCR development and could be applied to any PCR, and (2) emissions accounting guidance for steel, cement and concrete products. Within each category there are *recommendations* for technical committees responsible for PCR update processes and *proposed next steps*, which relate to ongoing discussions and technical analysis by the IDDI and stakeholders from industry.

This guidance is designed to be used by a program operator or other qualified facilitator of the PCR revision process and will form a common basis to foster collaboration between governments, standard setting organizations and programme operators to commence the revision process. The guidance covers, at the minimum, the following product sub-categories: cement in ready-mix concrete, cement in prefabricated concrete block, hot-rolled structural steel sections, hollow structural steel section, steel plate, concrete reinforcing steel.<sup>6</sup>

It is important to consider that non-construction steels for automobiles, white goods and other sectors represent a key segment of the steel market and may not be addressed by the PCRs in this document. While a separate effort may be required to establish comparable PCRs and a common reporting format, the principles-based framework in the IDDI Secretariat white paper could serve as the basis for such work.

# 1. General guidance

The following proposals are applicable to the PCRs covering steel, cement and concrete products and could be applied to further product categories.

#	All Product Category Rules
1.1	<i>Recommendation:</i> PCRs compliant with these guidelines should follow a standard naming convention and contain a statement declaring alignment.
1.2	<i>Recommendation:</i> When preparing to review and update existing PCRs, the committees responsible should use the most recent international or regional (whichever is most relevant) core PCR, and sub-PCRs for the products under study. The information modules required by the PCRs shall be derived in a way that conforms to the reference standard, and product sub-categories (steel, cement and concrete) shall be defined as per the definitions in the chosen reference standards.
1.3	<i>Recommendation:</i> There should be consistency in the emissions accounting approach between different PCRs for construction products as well as sub-PCRs for steel, cement and concrete products. This will improve comparability and interoperability of data in EPDs and minimize bias between functionally similar products. This could apply to product sub-categories beyond the scope of this guidance.
1.4	<p><i>Recommendation:</i> PCRs should set a clear preference and expectation for primary emissions data specific to the processes and supply chain for a specific product described in an EPD. This includes emissions related to direct energy usage, indirect energy usage (i.e., electricity, heat or steam produced off-site) and the extraction and processing of materials in the upstream value chain. Where used, secondary data should be clearly labelled, including the name of the database or source.</p> <p>Where primary data for material inputs and energy sources are not generally available, standard setting organizations should develop a mechanism to accelerate availability (see <a href="#">Annex 1.1</a>).</p> <p><i>Proposed next steps:</i> By 2030 secondary data used in a LCA should be sourced from an open-source, non-restrictive, internationally recognised database. Governments should engage with database owners on this topic in order to accelerate understanding of what would be required to develop, launch and maintain such databases.</p>
1.5	<p><i>Proposed next steps:</i> By 2026 develop or endorse a mechanism to account for and disclose the proportion of emissions represented by primary data in an EPD. This should include data for direct and indirect emissions from energy sources and material inputs.</p> <p>By 2026 develop or endorse a mechanism to compare or rank EPDs based on the proportion of emissions represented by primary data in an EPD.</p>



#	All Product Category Rules
1.6	<p><i>Recommendation:</i> Where PCRs are used to create an industry average, multi-site, or multi-product EPD, the EPD should include:</p> <ul style="list-style-type: none"> <li>▪ Sample size (number of facilities or products included in the dataset)</li> <li>▪ Minimum and maximum GWP values in the dataset</li> <li>▪ Standard deviation in the dataset</li> <li>▪ Production volume per year represented</li> </ul>
1.7	<p><i>Recommendation:</i> SI units should be used as the default for all data in EPDs:</p> <ul style="list-style-type: none"> <li>▪ Mass: kg or (metric) t</li> <li>▪ Length: m</li> <li>▪ Area: m<sup>2</sup></li> <li>▪ Volume: m<sup>3</sup></li> <li>▪ Time: years</li> <li>▪ Items/pieces where relevant</li> </ul> <p>Other units commonly used in regional markets may be optionally included in addition to SI units. In these instances, the PCR that wishes to include additional units should outline fixed conversion factors (and to which significant figure) between the units of measurement.</p> <p>New PCRs that address multi-material products, such as precast concrete or fenestration, may require two or more declared units to account for the characteristics of different constituent materials. In this scenario, a PCR should provide <i>declared parameters</i> and relevant SI units.</p>
1.8	<p><i>Recommendation:</i> It is the responsibility of the program operator to check EPDs with particular focus on the quality of data provided by manufacturers to limit the range of uncertainty in the EPD. The program operator should publish its program instructions (governance document) for data quality assessment.</p> <p><i>Proposed next steps:</i> By 2025 determine if and how PCRs should provide data collection forms for standardized data collection by entities using the PCR.</p> <p>By 2025 determine if and how the PCR should provide fixed links (URLs) to the Program Operator’s General Program Instruction, public comments (with PCR Committee responses), lists of interested parties, lists of PCR Committee members and their association, links to the underlying LCA associated with the PCR, and links to the Program Operator’s “Part A PCR” (if relevant).</p>
1.9	<p><i>Recommendation:</i> EPDs should follow a standardized digital format, based on the principles of consistent methodology, upstream data, and machine-readable structure (for more information see <a href="#">Annex 1.2</a>).</p>
1.10	<p><i>Recommendation:</i> PCRs specified for public procurement must be available to users on Reasonable and Non-Discriminatory (RAND) licensing terms.</p>

## 2. Technical recommendations for product category rule harmonization

Recommendations in each product column are applicable to that product category only.

#	Criteria	Steel	Cement	Concrete
2.1	<b>Reference standards</b>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ ISO 21930:2017; and</li> <li>▪ Steel sub-PCR compliant with ISO 21930:2017</li> </ul> <p>or;</p> <ul style="list-style-type: none"> <li>▪ EN 15804:2012+A2:2019; and</li> <li>▪ Steel sub-PCR compliant with EN 15804:2012+A2:2019</li> </ul>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ ISO 21930:2017; and</li> <li>▪ Cement sub-PCR compliant with ISO 21930:2017</li> </ul> <p>or;</p> <ul style="list-style-type: none"> <li>▪ EN 15804:2012+A2:2019; and</li> <li>▪ EN 16908:2017+A1:2022</li> </ul>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ ISO 21930:2017; and</li> <li>▪ Concrete sub-PCR compliant with ISO 21930:2017</li> </ul> <p>or;</p> <ul style="list-style-type: none"> <li>▪ EN 15804:2012+A2:2019; and</li> <li>▪ EN 16757:2022</li> </ul>
2.2	<b>Declared Unit (DU)</b>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ Mass: 1 kg steel product</li> </ul>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ Mass: 1 t</li> </ul>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ Volume: 1 m<sup>3</sup></li> </ul>
2.3	<b>Functional Unit (FU)</b>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ Mass: 1 kg steel product</li> </ul>	<p><i>Recommendation:</i></p> <p>N/A</p>	<p><i>Recommendation:</i></p> <p>N/A</p>
2.4	<b>Other FU/DU requirements</b>	<p><i>Recommendation:</i></p> <ul style="list-style-type: none"> <li>▪ For disclosure of crude steel [see 2.12.2]: 1 kg cast product</li> </ul>	<p><i>Recommendation:</i></p> <p>N/A</p>	<p><i>Recommendation:</i></p> <p>N/A</p>
2.5	<b>EPD scope</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>1. LCA modules A1 - A3 are required.</li> <li>2. With option to include modules A4-D, to be in conformance with specific requirements under the chosen reference standard.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>1. LCA modules A1 - A3 are required.</li> <li>2. With option to include modules A4-D, to be in conformance with specific requirements under the chosen reference standard.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>1. LCA modules A1 - A3 are required.</li> <li>2. With option to include modules A4-D, to be in conformance with specific requirements under the chosen reference standard.</li> </ol>

#	Criteria	Steel	Cement	Concrete
2.6	<b>System boundaries calculations</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per Reference Standards [2.1]</li> <li>Treatment of scrap steel: per ISO 20915:2018               <ol style="list-style-type: none"> <li>Unprocessed scrap steel shall have zero embodied emissions for modules A1-A3.<sup>7</sup></li> <li>Emissions arising from transport and processing of scrap steel shall be included in the system boundary of module A1.</li> </ol> </li> <li>PCRs should include flexibility to account for the future inclusion of new energy sources, materials, reducing agents and technologies, including carbon capture, utilization, and storage.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per Reference Standards [2.1]</li> <li>PCRs should include flexibility to account for the future inclusion of new energy sources, materials, and technologies, including carbon capture, utilization, and storage.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per Reference Standards [2.1]</li> <li>PCRs should include flexibility to account for the future inclusion of new energy sources, materials, and technologies, including carbon capture, utilization, and storage.</li> </ol>
2.7	<b>Allocation method</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>The approach to emissions allocation for co-outputs must be aligned between the systems that produce and use those co-outputs.</li> <li>The PCR shall cite any other PCRs considered and state whether a consistent allocation rule was adopted.<sup>8</sup></li> <li>Regardless of allocation approach, emissions associated with co-outputs must be fully accounted for by the systems that produce and/or use those co-outputs.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate the options set out in the IDDI Secretariat white paper to determine an accounting approach for emissions allocation to co-outputs that is accepted by governments and relevant sectors.</li> <li><i>Upon implementation of (4):</i> PCRs that use an allocation approach aligned across adjacent sectors should state this and reference the adjacent PCRs by name.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>The approach to emissions allocation for co-outputs must be aligned between the systems that produce and use those co-outputs.</li> <li>The PCR shall cite any other PCRs considered and state whether a consistent allocation rule was adopted.<sup>8</sup></li> <li>Regardless of allocation approach, emissions associated with co-outputs must be fully accounted for by the systems that produce and/or use those co-outputs.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate the options set out in the IDDI Secretariat white paper to determine an accounting approach for emissions allocation to co-outputs that is accepted by governments and relevant sectors.</li> <li><i>Upon implementation of (4):</i> PCRs that use an allocation approach aligned across adjacent sectors should state this and reference the adjacent PCRs by name.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>The approach to emissions allocation for co-outputs must be aligned between the systems that produce and use those co-outputs.</li> <li>The PCR shall cite any other PCRs considered and state whether a consistent allocation rule was adopted.<sup>8</sup></li> <li>Regardless of allocation approach, emissions associated with co-outputs must be fully accounted for by the systems that produce and/or use those co-outputs.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate the options set out in the IDDI Secretariat white paper to determine an accounting approach for emissions allocation to co-outputs that is accepted by governments and relevant sectors.</li> <li><i>Upon implementation of (4):</i> PCRs that use an allocation approach aligned across adjacent sectors should state this and reference the adjacent PCRs by name.</li> </ol>

#	Criteria	Steel	Cement	Concrete
2.8	<b>Carbonation</b>	<p><i>Recommendation:</i></p> <p>N/A</p>	<p><i>Recommendation:</i></p> <p>N/A</p>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Where carbonation is accounted for in modules A1-A3 (per ISO 21930 and EN 16757), a GWP value for modules A1-A3 not including carbonation should be disclosed additionally in the EPD.</li> <li>Credits associated with carbonation in any module (e.g., via natural uptake or CO<sub>2</sub> injection) must not be accounted for in the EPD if the same credit is linked to the sale of carbon credits on a voluntary carbon market. This is to avoid inadvertent multiple counting of carbon credits. Credits of this type are not typically used in mandatory carbon markets.</li> <li>Where carbonation is considered in modules B, C, or D the results should be reported separately and associated with well-described scenarios, containing justification for any negative emissions accounted for.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> develop a position on the inclusion or exclusion of credits calculated for carbonation when assessing concrete products against low- and near-zero emission thresholds.</li> </ol>
2.9	<b>Criteria for the exclusion of inputs and outputs</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1]. Where insufficient data are available for a unit process, the 'cut-off criteria' shall be 1% of primary energy usage and 1% of the total mass of the unit process. Total neglected energy usage and mass must be no more than 5% of primary energy usage or 5% of product inputs by mass, combined. All cut-offs must be justified. This aligns to ISO 21930 and EN 15804.</li> <li>The additional rules contained in ISO 21930 and EN 15804 for managing cut-offs shall be followed.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1]. Where insufficient data are available for a unit process, the 'cut-off criteria' shall be 1% of primary energy usage and 1% of the total mass of the unit process. Total neglected energy usage and mass must be no more than 5% of primary energy usage or 5% of product inputs by mass, combined. All cut-offs must be justified. This aligns to ISO 21930 and EN 15804.</li> <li>The additional rules contained in ISO 21930 and EN 15804 for managing cut-offs shall be followed.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1]. Where insufficient data are available for a unit process, the 'cut-off criteria' shall be 1% of primary energy usage and 1% of the total mass of the unit process. Total neglected energy usage and mass must be no more than 5% of primary energy usage or 5% of product inputs by mass, combined. All cut-offs must be justified. This aligns to ISO 21930 and EN 15804.</li> <li>The additional rules contained in ISO 21930 and EN 15804 for managing cut-offs shall be followed.</li> </ol>

#	Criteria	Steel	Cement	Concrete
2.10	<b>Selection of data and data quality</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1], an EPD describing a specific product shall be calculated using primary data for at least the processes over which the manufacturer of the specific product has influence, or average data derived from specific production processes on-site.</li> <li>The manufacturer should source primary, site-specific LCI data for energy sources and input materials in the upstream supply chain and disclose where secondary or generic data are used [1.4].</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Determine and recommend an internationally accepted data quality assessment methodology.</li> <li><i>By 2025:</i> Determine and recommend specific processes, material inputs, fuels and energy sources in the upstream value chain for which primary data should be required in product LCAs.</li> <li><i>By 2025:</i> Determine and recommend criteria to assess the relevancy, specificity and quality of background datasets.</li> <li><i>By 2026:</i> Determine and recommend whether PCRs should name a regionally specific background dataset to use when product and/or facility specific data are not available.</li> <li><i>By 2025:</i> Evaluate the proposals set out in the IDDI Secretariat white paper on accounting for the use of alternative fuels, including biogenic inputs (biomass and waste biomass), and recommend an approach.</li> <li><i>By 2026:</i> Develop guidance on reporting emissions related to electricity consumption. Using ISO 14067:2018<sup>9</sup> as a reference.</li> <li><i>By 2026:</i> Determine whether EPDs or EPD background reports should specify the source of energy inputs.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1], an EPD describing a specific product shall be calculated using primary data for at least the processes over which the manufacturer of the specific product has influence, or average data derived from specific production processes on-site.</li> <li>The manufacturer should source primary, site-specific LCI data for energy sources and input materials in the upstream supply chain and disclose where secondary or generic data are used [1.4].</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Determine and recommend an internationally accepted data quality assessment methodology.</li> <li><i>By 2025:</i> Determine and recommend specific processes, material inputs,<sup>10</sup> fuels and energy sources in the upstream value chain for which primary data should be required in product LCAs.</li> <li><i>By 2025:</i> Determine and recommend criteria to assess the relevancy, specificity and quality of background datasets.</li> <li><i>By 2026:</i> Determine and recommend whether PCRs should name a regionally specific background dataset to use when product and/or facility specific data are not available.</li> <li><i>By 2025:</i> Evaluate the proposals set out in the IDDI Secretariat white paper on accounting for the use of alternative fuels, including biogenic inputs (biomass and waste biomass), and recommend an approach.</li> <li><i>By 2026:</i> Develop guidance on reporting emissions related to electricity consumption. Using ISO 14067:2018 as a reference.</li> <li><i>By 2026:</i> Determine whether EPDs or EPD background reports should specify the source of energy inputs.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Per reference standards [2.1], an EPD describing a specific product shall be calculated using primary data for at least the processes over which the manufacturer of the specific product has influence, or average data derived from specific production processes on-site.</li> <li><i>Starting no later than 2025:</i> Site specific cement LCI data shall be used in concrete EPDs.<sup>11</sup></li> <li>The manufacturer should source primary, site-specific LCI data for energy sources and input materials in the upstream supply chain and disclose where secondary or generic data are used [1.4].</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Determine and recommend an internationally accepted data quality assessment methodology.</li> <li><i>By 2025:</i> Determine and recommend specific processes, material inputs, fuels and energy sources in the upstream value chain and determine for which primary data should be required in product LCAs.</li> <li><i>By 2025:</i> Determine and recommend criteria to assess the relevancy, specificity and quality of background datasets.</li> <li><i>By 2026:</i> Determine and recommend whether PCRs should name a regionally specific background dataset to use when product and/or facility specific data are not available.</li> <li><i>By 2025:</i> Evaluate the proposals set out in the IDDI Secretariat white paper on accounting for the use of alternative fuels, including biogenic inputs (biomass and waste biomass), and recommend an approach.</li> <li><i>By 2026:</i> Develop guidance on reporting emissions related to electricity consumption. Using ISO 14067:2018 as a reference.</li> </ol>

#	Criteria	Steel	Cement	Concrete
		10. <i>By 2026</i> : Determine whether EPDs should indicate the variability of data where one-year average data is used in Module A3.	10. <i>By 2026</i> : Determine whether EPDs should indicate the variability of data where one-year average data is used in Module A3.	10. <i>By 2026</i> : Determine whether EPDs or EPD background reports should specify the source of energy inputs. 11. <i>By 2026</i> : Determine whether EPDs should indicate the variability of data where one-year average data is used in Module A3.
2.11	<b>Additional technical information</b>	<p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025</i>: Develop guidance on the disclosure of steel product and grade in EPDs.</li> <li><i>By 2025</i>: Develop position on the disclosure of steel recyclability at end of life and the environmental value of scrap.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>EPDs should specify the cement type.</li> <li>Definitions of cement types should retain flexibility to consider future cement types and constituents.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2026</i>: Evaluate broadening the guidance to include specific material inputs such as, but not limited to, pozzolans or silicas.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>Compressive strength (28 days)</li> <li>Density (kg/m<sup>3</sup>)</li> </ol> <p><i>Proposed next steps:</i></p> <p><i>By 2025</i>: Evaluate the following topics and develop guidance where necessary and additive to concrete EPDs:</p> <ol style="list-style-type: none"> <li>Compressive strength (56 days) to account for setting times affected by SCMs</li> <li>Exposure Class / Durability</li> <li>Product application</li> <li>Concrete Rheology</li> <li>Finishability</li> </ol>
2.12	<b>Comparability</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>As per reference standards [2.1]. Inclusion of (2) and (3) would support the evaluation of GWP-values in steel EPDs with thresholds for low- and near-zero emission crude steel:</li> <li><i>Crude steel</i>: the GWP of 1 metric ton of crude steel should be reported separately in the EPD. This is additional to the reporting of GWP for Modules A1-A3 and shall be clearly labelled. Calculations shall follow the guidance for allocation of emissions co-outputs [2.7].</li> <li><i>Scrap steel</i>: the percentage of recycled scrap steel used in the finished product shall be reported in the EPD. This value should include pre-consumer and post-consumer scrap steel only. Values over 100% shall be considered as 100% for comparison against the thresholds.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>As per reference standards [2.1]. Inclusion of (2) would support the evaluation of GWP-values in cement EPDs with thresholds for low- and near-zero emission cement:</li> <li>Cement: the clinker-to-cement ratio should be reported separately in the EPD.</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025</i>: Evaluate and develop guidance on the inclusion of methodologies that apply an 'uncertainty factor' to reported GWP values in EPDs, reflecting uncertainty based on the percentage of secondary data used.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>As per reference standards [2.1].</li> <li><i>Cement</i>: the GWP of 1 metric ton of cement should be reported separately in the concrete EPD. This is additional to the reporting of GWP for Modules A1-A3 and shall be clearly labelled. Calculations shall follow the guidance for allocation of emissions co-outputs [2.07].</li> </ol> <p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025</i>: Evaluate and develop guidance on the inclusion of methodologies that apply an 'uncertainty factor' to reported GWP values in EPDs, reflecting uncertainty based on the percentage of secondary data used.</li> </ol>



#	Criteria	Steel	Cement	Concrete
		<p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate and develop guidance on the inclusion of methodologies that apply an ‘uncertainty factor’ to reported GWP values in EPDs, reflecting uncertainty based on the percentage of secondary data used.</li> <li><i>By 2025:</i> Evaluate and develop guidance on whether PCRs should specify an LCIA method, preferably with GWP factors based on IPCC AR6 (or latest version) and take into account uncertainty factors.</li> <li><i>By 2026:</i> Evaluate the feasibility of having a uniform approach for the designation of manufacturing processes to specific life cycle assessment modules, considering the product under study. If found to be valuable, develop guidance to integrate this into PCRs.</li> </ol>	<ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate and develop guidance on whether PCRs should specify an LCIA method, preferably with GWP factors based on IPCC AR6 (or latest version) and take into account uncertainty factors.</li> <li><i>By 2026:</i> Evaluate the feasibility of having a uniform approach for the designation of manufacturing processes to specific life cycle assessment modules, considering the product under study. If found to be valuable, develop guidance to integrate this into PCRs.</li> </ol>	<ol style="list-style-type: none"> <li><i>By 2025:</i> Evaluate and develop guidance on whether PCRs should specify an LCIA method, preferably with GWP factors based on IPCC AR6 (or latest version) and take into account uncertainty factors.</li> <li><i>By 2026:</i> Evaluate the feasibility of having a uniform approach for the designation of manufacturing processes to specific life cycle assessment modules, considering the product under study. If found to be valuable, develop guidance to integrate this into PCRs.</li> </ol>
2.13	<b>Module D</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>If reported, module C and D should be reported separately.</li> </ol>	<p><i>Recommendation:</i></p> <p>N/A</p>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>If reported, module C and D should be reported separately.</li> </ol>
2.14	<b>Other requirements</b>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>EPDs shall be published in a machine-readable digital format compliant with an open data standard (see <a href="#">Annex 1.2</a>).</li> <li>EPDs shall clearly and transparently report both gross GWP and net GWP in relation to any use of alternative fuels where relevant.</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>EPDs shall be published in a machine-readable digital format compliant with an open data standard (see <a href="#">Annex 1.2</a>).</li> <li>EPDs shall clearly and transparently report both gross GWP and net GWP in relation to any use of alternative fuels (treatment of waste through co-processing in cement kilns).</li> </ol>	<p><i>Recommendation:</i></p> <ol style="list-style-type: none"> <li>EPDs shall be published in a machine-readable digital format compliant with an open data standard (see <a href="#">Annex 1.2</a>).</li> <li>EPDs shall clearly and transparently report both gross GWP and net GWP in relation to any use of alternative fuels (treatment of waste through co-processing in cement kilns).</li> </ol>

#	Criteria	Steel	Cement	Concrete
		<p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li>3. By 2025: Evaluate and develop recommendations on specific topics related to carbon capture, utilization and storage, including the certainty and duration of carbon storage required to claim abatement, and whether green policy objectives should be reflected in product level emission accounting. This should be carried out with a view of ongoing work related to CCUS in other fora.</li> <li>4. By 2025: Evaluate and develop recommendations on the permissibility, design and application of alternative chain of custody models, including mass balance and Book &amp; Claim.</li> <li>5. By 2025: Evaluate the value of disaggregated reporting of modules A1-A3 in EPDs and consider developing guidance for PCRs.</li> </ol>	<p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li>3. By 2025: Evaluate and develop recommendations on specific topics related to carbon capture, utilization and storage, including the certainty and duration of carbon storage required to claim abatement, and whether green policy objectives should be reflected in product level emission accounting. This should be carried out with a view of ongoing work related to CCUS in other fora.</li> <li>4. By 2025: Evaluate and develop recommendations on the permissibility, design and application of alternative chain of custody models, including mass balance and Book &amp; Claim.</li> <li>5. By 2025: Evaluate the value of disaggregated reporting of modules A1-A3 in EPDs and consider developing guidance for PCRs.</li> </ol>	<p><i>Proposed next steps:</i></p> <ol style="list-style-type: none"> <li>3. By 2025: Evaluate and develop recommendations on specific topics related to carbon capture, utilization and storage, including the certainty and duration of carbon storage required to claim abatement, and whether green policy objectives should be reflected in product level emission accounting. This should be carried out with a view of ongoing work related to CCUS in other fora.</li> <li>4. By 2025: Evaluate and develop recommendations on the permissibility, design and application of alternative chain of custody models, including mass balance and Book &amp; Claim.</li> <li>5. By 2025: Evaluate the value of disaggregated reporting of modules A1-A3 in EPDs and consider developing guidance for PCRs.</li> <li>6. By 2025: Evaluate and consider developing or updating existing guidance for cast-in-place (ready mixed) and precast concrete.</li> </ol>

## 3. Glossary

#	Term	Definition	Source
3.1	Adjacent product category rule	A product category rule for a related product category to the product category under study. For example, a concrete PCR is adjacent to a cement PCR and a steel PCR.	Adapted from ACLCA PCR Guidance – Process and Methods Toolkit. Guidance for Allocating Burdens and Benefits of Materials Shared Across Product Systems (2022)
3.2	Allocation; Co-output allocation	Partitioning the input or output flows of a process or a product system between the product system under study and one or more other product systems. See Co-output.	ISO 14044:2006, 3.17
3.3	Biomass	Material of biological origin, excluding material embedded in geological formations or transformed to fossilized material, and excluding peat.	ISO 21930:2017, 3.7.3
3.4	Carbonation	The chemical reaction that occurs when carbon dioxide [CO <sub>2</sub> ] in the air naturally reacts with calcium hydroxide [Ca(OH) <sub>2</sub> ] in cement to form calcium carbonate [CaCO <sub>3</sub> ]. This can contribute to the drawdown of carbon dioxide from the atmosphere to be stored in the concrete over its lifetime. Carbonation can take place as a result of carbon dioxide injection directly into the concrete mix before it is poured, during storage of precast concrete products before use or during the service life of the concrete. The amount of carbonation for a specific product varies according to concrete mix, element geometry and environment. Concrete can also be crushed at the end of life to accelerate the carbonation process.	Adapted from ISO 21930:2017, 7.2.8
3.5	Carbon capture, utilization and storage (CCUS)	<p>Carbon capture, utilization and storage (CCUS) is a suite of technological processes which involve capturing carbon dioxide [CO<sub>2</sub>] gas for use or long-term storage.</p> <ol style="list-style-type: none"> <li><b>Carbon capture and utilization (CCU)</b> is a process in which captured CO<sub>2</sub> is used produce a new product. This can displace fossil-derived carbon products with 'green products' such as e-fuels. CCU stores carbon temporarily, depending on the lifespan of the manufactured product.</li> <li><b>Carbon capture and storage (CCS)</b>: a process in which a relatively pure stream of carbon dioxide (CO<sub>2</sub>) from industrial and energy-related sources is separated (captured), conditioned, compressed and transported to a storage location for long-term isolation from the atmosphere. CCS can also be applied to CO<sub>2</sub> from the combustion of biomass (called BECCS) and since plants absorb CO<sub>2</sub> during growth, BECCS offers permanent removal of CO<sub>2</sub> from the atmosphere.</li> </ol>	<p>CCU definition adapted from the SR1.5 glossary</p> <p>CCS definition from the IPCC AR6 glossary</p>

#	Term	Definition	Source
3.6	Cast product	A steel product formed by using a mold. Casting can be non-continuous, where steel is formed into individual ingots, or it can be continuous, where steel is solidified in the form of a continuous strand.	World Steel Association glossary
3.7	Co-output	Any of two or more material or energetic outputs from the same unit process or product system. NOTE: Term 'co-product' altered to 'co-output' to reflect legislation in jurisdictions where co-outputs from industrial processes may not be considered products.	Adapted from ISO 14044:2006, 3.10
3.8	Complementary-Product Category Rule (c-PCR)	See Sub-PCR.	
3.9	Crude steel	Steel in the first solid state after melting, suitable for further processing or for sale. Synonymous with raw steel. Includes ingots, semi-finished products (slabs, blooms, billets) and steel that is cast.	World Steel Association glossary
3.10	Cut-off criteria	Thresholds for the energy and mass of inputs that are proportional to the total energy and mass of inputs to the product. Energy sources and material inputs that contribute energy and mass below the thresholds can be neglected from the life cycle analysis.	Adapted from ISO 14040:2006, 3.18
3.11	Data quality	Characteristics of data that relate to their ability to satisfy stated requirements.	ISO 14044:2006, 3.19
3.12	Data source	The place of origin of information about the environmental impact of an energy source or input material considered in a life cycle assessment.	Adapted from 2022 ACLCA PCR Open Standard: Process and Methods Toolkit
3.13	Declared unit	Quantity of a construction product for use as a reference unit in an environmental product declaration based on life cycle assessment, for the expression of environmental information needed in information modules. EXAMPLE: Mass (kilogram or metric tonne), volume (cubic metre).	ISO 21930:2017
3.14	Downstream (in the value chain or life cycle)	Processes following a life cycle stage. Towards the use and end-of-life of a product.	Adapted from ISO 21931-1:2010, 3.2
3.15	Environmental Product Declaration (EPD)	An environmental report providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information. An EPD also includes additional product and company information.	ISO 14025:2006

#	Term	Definition	Source
3.16	Economic allocation	A method of allocating the emissions from a unit process between the outputs and co-outputs in a way that reflects the economic value of the co-outputs when they leave the unit process.	Adapted from ISO 21930:2017
3.17	EPD user	An individual or organization that uses environmental product declarations.	
3.18	Eutrophication	Over-enrichment of water by nutrients such as nitrogen and phosphorus. It is one of the leading causes of water quality impairment. The two most acute symptoms of eutrophication are hypoxia (or oxygen depletion) and harmful algal blooms.	IPCC AR6 Glossary
3.19	Functional unit	A quantified description of a product or service for use as a reference unit in an EPD based on LCA that includes all stages of the lifecycle.	ISO 21930:2017, 3.4.5
3.20	Generic data; generic emissions data	See Secondary data.	
3.21	Global Warming Potential (GWP)	The metric used to quantify heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide (CO <sub>2</sub> ), typically expressed as <i>kg CO<sub>2</sub>e per unit of product, where kg CO<sub>2</sub>e represents 'kilograms carbon dioxide equivalent'</i> .	US Government Environmental Protection Agency's Greenhouse Gas Emissions and Sinks Glossary. Definition chosen over for readability when compared against IPCC glossary.
3.22	Greenhouse gas (GHG)	Gaseous constituent of the atmosphere, natural or anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds.  Note 1: Greenhouse gases caused by human activities and relevant for this document include carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF <sub>6</sub> ) and nitrogen trifluoride (NF <sub>3</sub> ).  Note 2: The IPCC publish up to date global warming potential values for greenhouse gases.	ISO 14064-1:2018, 3.1.1
3.23	Greenhouse gas (GHG) emission	Release of a <i>greenhouse gas</i> into the atmosphere.	ISO 14064-1:2018, 3.1.5
3.24	Interoperable; interoperability	The ability of a system to work with other systems, specifically with the aim of exchanging and making use of information and data.  In the context of product category rule harmonization, the term interoperable sets out the ambition that emission accounting requirements in product category rules could be made less flexible and that different product category rules could be harmonized, making the resulting data in EPDs comparable.	As used in the IEA <i>Emissions Measurement and Data Collection for a New Zero Steel Industry</i> (2023) report and the IDDI white paper <i>Driving Consistency in the Greenhouse Gas Accounting System</i> (2023).

#	Term	Definition	Source
3.25	Life cycle	Consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal.	ISO 14044:2006
3.26	Life Cycle Assessment (LCA)	Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle.	ISO 14044:2006
3.27	Life Cycle Assessment (LCA) module; also upstream module	Distinct stages of the life cycle assessment allowing categorization of greenhouse gas emissions from different sources.	Adapted from EN 15804
3.28	Life Cycle Inventory (LCI)	Phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout its life cycle.	ISO 14044:2006
3.29	Life Cycle Impact Assessment (LCIA)	Phase of life cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts for a product system throughout the life cycle of the product.	ISO 21930:2017, 3.3.5
3.30	Machine readable digital format	Relates to the layout and format of environmental product declarations, enabling data contained in environmental product declarations to be read and indexed by software, such as an environmental product declaration database.	Adapted from ISO 22057:2022, 3.3.11
3.31	Neglected energy	Energy not accounted for in the life cycle analysis of a product, typically in relation to <i>Criteria for the exclusion of inputs and outputs</i> .	Adapted from ISO 21930:2017, 7.1.8
3.32	Ozone depletion	Destruction of ozone (O <sub>3</sub> ) by man-made gases once they reach the ozone layer in the stratosphere. Ozone-depleting substances include: chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), halons, methyl bromide, carbon tetrachloride and methyl chloroform. They are used as refrigerants in commercial, home and vehicle air conditioners and refrigerators, foam blowing agents, components in electrical equipment, industrial solvents, solvents for cleaning (including dry cleaning), aerosol spray propellants and fumigants.	IPCC AR6 Glossary
3.33	Physical partitioning	A method of avoiding allocation by sub-dividing a unit process through partitioning of individual inputs and outputs between co-products in a way which reflects the underlying physical relationships between them. This reflects causal relationships of inputs and outputs that result from quantitative changes in co-product outputs or functionality, such as energy relationships and chemical composition.	World Steel Association <i>A Method to Determine the LCI of Steel Industry Co-Products</i> (2014)
3.34	Primary emission data; primary data	A quantified emissions value of a unit process or activity obtained from a direct measurement, or a calculation based on direct measurements at its original source.	Adapted from ISO 21930:2017



#	Term	Definition	Reference details
3.35	Primary energy	Energy found in nature that has not been subjected to any human engineered conversion process. It encompasses energy contained in fuels and other forms of energy, including waste, received as input to a system.	Adapted from ISO 21930:2017, 3.6.1
3.36	Process	Set of interrelated or interacting activities that transforms inputs into outputs.	ISO 9000:2005, 3.4.1
3.37	Product	Any good or service.	ISO 14040:2006, 3.9
3.38	Product category and product sub-category	A group of products that share similar characteristics. In this document the product category is construction products. Examples of product sub-categories are steel, cement and concrete.	Adapted from ISO 14025:2006
3.39	Product Category Rules (PCR)	A set of specific rules, requirements, and guidelines for developing environmental product declarations for one or more product categories.	From ISO 14025:2006
3.40	Reasonable and Non-Discriminatory terms (RAND)	A voluntary licensing commitment that standards organizations often request from the owner of an intellectual property right that is, or may become, essential to practice a technical standard.	Layne-Farrar, Anne; Padilla, A. Jorge; Schmalensee, Richard (2007). "Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments". <i>Antitrust Law Journal</i> . 74: 671
3.41	Scrap steel	<p>Scrap steel, recovered at the end-of-life of the steel containing product can be recycled in the steelmaking process and is defined in one of three ways:</p> <ol style="list-style-type: none"> <li>1. <b>Internal scrap:</b> steel scrap from BOF or EAF steelmaking unit process that is recycled back into the same unit process.</li> <li>2. <b>Pre-consumer scrap:</b> steel scrap diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process capable of being reclaimed with the same process that generated it. Pre-consumer scrap includes: <ol style="list-style-type: none"> <li>a. <b>Home scrap:</b> steel scrap from a downstream steelworks process (e.g., rolling, coating) that is returned to the steel making process.</li> <li>b. <b>Fabrication scrap or manufacturing scrap:</b> steel scrap from outside the boundary of the steelworks.</li> </ol> </li> <li>3. <b>Post-consumer scrap:</b> material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes <b>end-of-life scrap</b>; steel scrap from a product that reaches the end of its life. Contrary to ISO 14021:2016, this excludes returns of material from the distribution chain. This scrap is included as fabrication or manufacturing scrap.</li> </ol>	worldsteel LCA methodology report

#	Term	Definition	Reference details
3.42	Secondary data	Indirectly measured, calculated, or obtained quantified value of a unit process or activity and related information within a product system or organization, not based on specific original source measurements.	ISO 21930:2017, 3.5.2
3.43	Specific data; specific emissions data	See primary emission data.	
3.44	Sub-category PCR or Sub-PCR	A set of specific rules, requirements and guidelines, which provide additional, consistent requirements to the core product category rule, for developing environmental product declarations for sub-categories of the overall product category defined by the core product category rule.	Adapted from ISO 21930:2017, 3.1.5
3.45	Transparent; transparency	Open, comprehensive and understandable presentation of information.	ISO 21930:2017, 3.3.9
3.46	Unit process	Smallest element considered in the life cycle inventory analysis for which input and output data are quantified.	ISO 14040:2006, 3.34
3.47	Upstream (in the value chain or life cycle)	Processes preceding a life cycle stage. Towards raw material extraction and production of a product.	Adapted from ISO 21931-1:2010, 3.15
3.48	Waste biomass	Substances which the holder intends or is required to dispose of biological origin, such as organic material from plants and animals.	Adapted from ISO 21930:2017, 3.3.11 and 3.7.3

# Annex 1

## 1.1. Accelerating the availability of specific data throughout the value chain

EPDs are typically produced using a mix of primary (specific) and secondary (generic) emissions data. However, not all EPDs indicate how much primary data has been used in the LCA and how closely the information in the EPD relates to the actual inputs and processes involved in the manufacture of the product. Greater transparency of the proportion of primary data or 'specificity' of the data used to produce an EPD could help inform decision making by purchasers who are comparing similar products. This could also provide value for policymakers, for example in setting requirements for EPDs to meet a specificity threshold (e.g., 70% or above) for a product to be eligible for procurement.

The availability of primary data in industrial value chains varies and standard setting organizations should consider mechanisms within the PCR development process to accelerate the availability of primary data. For example; where primary data are not available for a material, standard-setting organizations could implement a transitional period after which facility or product specific LCI data becomes a requirement in the PCR (i.e., "shall be used"). This would signal upstream manufacturers and suppliers to implement emissions measurement and reporting in a way that can be used in EPDs.

## 1.2. EPD machine readable digital formats

The value of data contained in EPDs is limited by an individual's ability to locate, access and utilize the information. To maximize this, EPDs should be published in accordance with an open standardized digital format. This would ensure that digital tools for LCAs, project design, procurement and reporting can query and extract data from EPD databases.

The IDDI Green Public Procurement Pledge explanatory note specifies that:

- Footnote 3, page 4. The reporting will be demonstrated with Type III Environmental Product Declarations (EPD), or other independently verified reports, covering the same aspects as the EPD, and in a machine readable format using an **open data standard** where available [...].
- Improved disclosure requirements: by 2030 it is expected that disclosure requirements will be based on a Product Category Rule agreed on across IDDI members, which will include a minimum resolution (i.e. product, facility, supply chain) and a requirement for machine readable format using an **open data standard**.

The following examples are provided for information only and are not an endorsement or requirement for conformity with the recommendations set out in this document at this time.

There are at least two open standards providing guidance for producing EPDs in a machine-readable digital format. These are [openEPD](#) and [ILCD+EPD](#). Other standards may exist.

## 1.3. Reference standards

ISO 21930:2017 is the core reference standard for this process, with EN 15804:2012+A2:2019 for manufacturers trading in the European market. Ideally, this document would recommend a single reference standard, however, due to the established and embedded nature of each PCR, specifying a single standard would limit the global accessibility of the guidance. The ambition is that over time, both standards will be reviewed and updated to remove misalignments and gaps in the emissions accounting methodologies.

## 1.4. Sub-PCRs and complementary-PCRs

Sub-PCRs and complementary-PCRs (both referred to as sub-PCRs) provide specific rules and guidance to follow when carrying out an LCA of a specific product sub-category. Sub-PCRs cannot be used independently and must be used with a full, or 'core', PCR, which will be specified in the sub-PCR. Sub-PCR and complementary-PCR are the terminology used in the ISO and EN systems respectively.

The IDDI has not compared the content of sub-PCRs against the recommendations set out in *Section 1: General Guidance*, and does not endorse specific sub-PCRs for use with ISO 21930:2017, however this may change in future iterations of the guidance. The following examples are provided for information only.

The following sub-PCRs are specified by the U.S. General Services Administration in the Interim Inflation Reduction Act Low Embodied Carbon Material Requirements:

- **Cement:** NSF PCR for Portland, Blended, Masonry, Mortar, and Plastic (Stucco) Cements
- **Concrete:** NSF PCR for Concrete
- **Steel:** UL Environment. Part B: Designated Steel Construction Product EPD Requirements
- **Steel:** SCS Global Services. North American Product Category Rule for Designated Steel Construction Products

Processes to review and update the construction steel and concrete sub-PCRs are ongoing in the US.

For entities that use EN 15804:2012+A2:2019, the IDDI recommends using the following sub-PCRs:

- Cement: EN 16908:2017+A1:2022. *Cement and building lime - Environmental product declarations - Product category rules complementary to EN 15804*
- Concrete: EN 16757:2022. *Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements*
- Steel: No sub-PCR currently recommended. The draft sub-PCR prEN 17662 is under development.

Where entities use this guidance as a basis to inform policy for construction products that are not steel, cement or concrete, all specified PCRs should be compliant with ISO 21930:2017, EN 15804:2012+A2:2019, or the latest versions of those standards. Consideration should be made to how a new or existing sub-PCR would align with the General Guidance recommendations and proposals in this document.

Where entities use this guidance to inform policy for non-construction products (and as such cannot use EN 15804:2012+A2:2019 or ISO 21930:2017), specified PCRs should be compliant with ISO 14025:2006 and ISO 14044:2006.

## Annex 2

### 2.1. Contributors to this document

This guidance document was developed based on a series of discussions held in 2023 and 2024 involving representatives from IDDI member governments and the organizations listed below.

Organization Name	Website
Agora Energiewende	<a href="https://agora-energiewende.de">agora-energiewende.de</a>
Bao Steel	<a href="https://baosteel.com">baosteel.com</a>
Boston Consulting Group	<a href="https://bcg.com">bcg.com</a>
Building Transparency	<a href="https://buildingtransparency.org">buildingtransparency.org</a>
Carbon Leadership Forum	<a href="https://carbonleadershipforum.org">carbonleadershipforum.org</a>
CARES Steel	<a href="https://carescertification.com">carescertification.com</a>
Cementis	<a href="https://cementis.com">cementis.com</a>
Concrete Zero, The Climate Group	<a href="https://theclimategroup.org">theclimategroup.org</a>
ConstructionLCA	<a href="https://constructionlca.co.uk">constructionlca.co.uk</a>
Construction Partners	<a href="https://constructionpartners.net">constructionpartners.net</a>
Global Cement and Concrete Association (GCCA)	<a href="https://gccassociation.org">gccassociation.org</a>
Heidelberg Materials	<a href="https://heidelbergmaterials.com">heidelbergmaterials.com</a>
Jernkonoret	<a href="https://jernkontoret.se">jernkontoret.se</a>
King Abdullah Petroleum Studies and Research Centre (KAPSARC)	<a href="https://kapsarc.org">kapsarc.org</a>
National Ready Mixed Concrete Association (NRMCA)	<a href="https://nrmca.org">nrmca.org</a>
National Asphalt Paving Association (NAPA)	<a href="https://asphaltpavement.org">asphaltpavement.org</a>
ResponsibleSteel	<a href="https://responsiblesteel.org">responsiblesteel.org</a>



Organization Name	Website
Rocky Mountain Institute (RMI)	<a href="http://rmi.org">rmi.org</a>
SmartEPD	<a href="http://smarteprd.com">smarteprd.com</a>
Swedish Institute for Standards (SIS)	<a href="http://sis.se">sis.se</a>
UK Steel Industry Advisory Group	<a href="http://makeuk.org/about/uk-steel">makeuk.org/about/uk-steel</a>
Verein Deutscher Zementwerke (VDZ)	<a href="http://vdz-online.de">vdz-online.de</a>
World Economic Forum (WEF)	<a href="http://weforum.org">weforum.org</a>
World Resources Institute (WRI)	<a href="http://wri.org">wri.org</a>
World Steel Association	<a href="http://worldsteel.org">worldsteel.org</a>
Wirtschaftsvereinigung Stahl (WV Stahl)	<a href="http://stahl-online.de">stahl-online.de</a>

The contents of this document are not to be construed as endorsements or reflective of the official positions of member governments or contributing organizations.

## References

- 1 Some regions may refer to embodied emissions as embedded emissions. The term embodied emissions is used in this document.
- 2 ISO 14025:2006. Environmental labels and declarations - Type III environmental declarations - Principles and procedures. <https://www.iso.org/standard/38131.html>.
- 3 ISO 14040:2006. Environmental management - Life cycle assessment - Principles and framework. <https://www.iso.org/standard/37456.html>.
- 4 ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines. <https://www.iso.org/standard/38498.html>.
- 5 Sub-PCRs and complementary-PCRs will be referred to as sub-PCRs in this document.
- 6 Product sub-categories are specified as per footnote 4 of the IDDI GPP Pledge. Cement in prefabricated concrete block does not include prefabricated reinforced concrete products. IDDI WG2 agreed to exclude reinforced prefabricated concrete blocks due to the complexity of developing proposals for goods containing two or more product categories. Sub-PCRs for steel, cement and concrete may reference further PCRs for constituent products, such as slag, portland cement and construction aggregate. PCRs for constituent products have not been assessed by IDDI WG2.
- 7 As an input material to the steel making process, unprocessed scrap steel will have an embodied emissions value of 0 t CO<sub>2</sub>e/ t scrap steel. Any emissions arising from the processing or transportation of scrap steel shall be accounted in module A1 of the system under study. Treatment processes for scrap may include but are not limited to separating, cutting, shredding, shearing, crushing, baling, and briquetting. Applying zero embodied emissions to unprocessed scrap steel is compatible with the IEA 'sliding scale' crude steel emissions intensity thresholds set out in the report *Achieving net zero heavy industry sectors in G7 members*: <https://www.iea.org/reports/achieving-net-zero-heavy-industry-sectors-in-g7-members>.
- 8 This is in alignment with the ACLCA PCR *Guidance for Allocating Burdens and Benefits of Materials Shared Across Product Systems*, 2022. [https://aclca.org/wp-content/uploads/2022-ACLCA-PCR-Guidance\\_Allocating\\_Materials\\_Shared\\_Systems\\_05252022.pdf](https://aclca.org/wp-content/uploads/2022-ACLCA-PCR-Guidance_Allocating_Materials_Shared_Systems_05252022.pdf).
- 9 ISO 14067:2018. *Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification*
- 10 For cement, product composition should be included in the background report and used in EPD calculations but not publicly disclosed in the EPD report.
- 11 Recognising that the cement data may include secondary data. If site specific cement data is not available, a clear explanation of efforts made to obtain data must be given.



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

Progress by innovation

