

RAILWAY INFRASTRUCTURE

PRODUCT GROUP CLASSIFICATION: UN CPC 53212, 53221 AND 53222

C-PCR-023 (TO PCR 2019:14)

VERSION 1.0.0

VALID UNTIL: 2027-12-19



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1 INTRODUCTION

1.1 GENERAL

This document constitutes complementary Product Category Rules (c-PCR) for developing Environmental Product Declarations (EPD) in the framework of the International EPD System: a programme for EPDs¹ according to ISO 14025, ISO 14040, ISO 14044, and product-specific standards, such as EN 15804, EN 15941 and ISO 21930 for construction products.² developed in the framework of the International EPD System: a programme for type III environmental declarations³ according to ISO 14025:2006. EPDs are voluntary documents for a company or an industry association to present transparent, consistent, and verifiable information about the environmental performance of their products (goods or services).

The General Programme Instructions (GPI), publicly available on www.environdec.com, includes the rules for the overall administration and operation of the programme and the basic rules for developing EPDs registered in the programme. A PCR complements the GPI and the normative standards by providing specific rules and guidelines for developing an EPD for one or more specific product categories (see Figure 1), thereby enabling the generation of consistent EPDs within a product category.

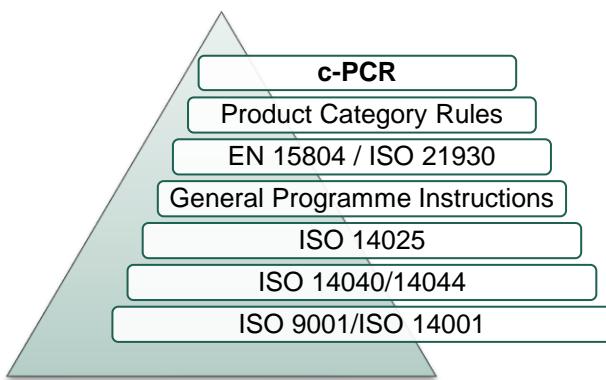


Figure 1 This c-PCR in relation to the hierarchy of standards and other documents.

The present c-PCR uses the following terminology:

- The term "shall" is used to indicate what is obligatory, i.e., a requirement.
- The term "should" is used to indicate a recommendation. Any deviation from a recommendation shall be justified in the EPD development process.
- The terms "may" or "can" are used to indicate an option that is permissible.

For definitions of other terms used in the document, see the GPI, normative standards, and PCR 2019:14 Construction products.

The latest version of the PCR is available on www.environdec.com.

Any references to this PCR shall include the PCR registration number, name, and version number.

Stakeholder feedback on PCRs is very much encouraged. Any comments on this PCR document may be sent directly to the PCR Moderator during its development or during the period of validity.

The programme operator maintains the copyright of the document to ensure that it is possible to publish, update when necessary, and available to all organisations to develop and register EPDs. Stakeholders participating in PCR development should be acknowledged in the final document and on the website.

1 Termed type III environmental declarations in ISO 14025.

2 When standards are referred to in this document, the version listed in Section 7 is intended unless otherwise stated.

3 Type III environmental declarations in the International EPD System are referred to as EPD, Environmental Product Declarations.

1.2 ROLE OF THIS DOCUMENT

This document provides complementary product category rules (c-PCR) to PCR 2019:14 Construction products, available on www.environdec.com. This document cannot be used by itself but shall be used together with PCR 2019:14 and EN 15804. The document can be used together with any valid version of PCR 2019:14, regardless of the version of PCR 2019:14 referred to in this document.

See Figure 2 for an illustration on how PCR 2019:14 and this c-PCR relates to each other and the EPDs that may be based on them.

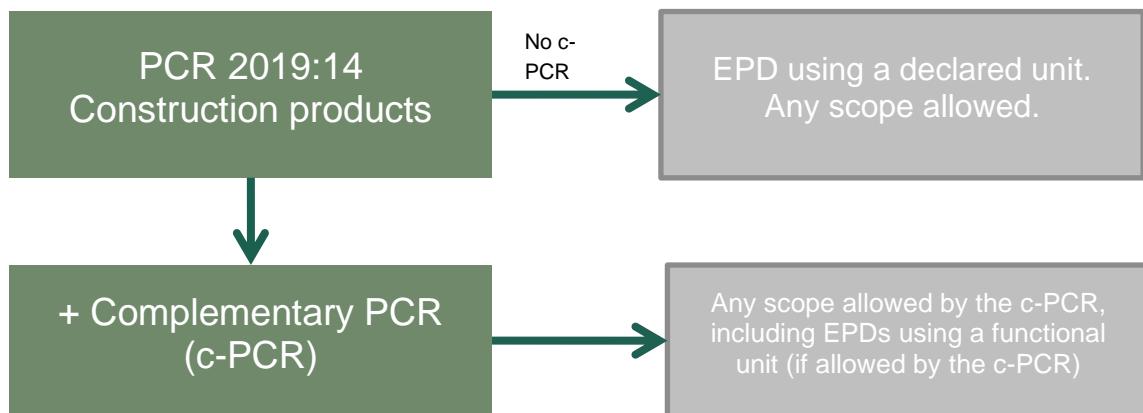


Figure 2 Overview of using PCR 2019:14 directly to develop an EPD or how to use it together with a c-PCR.

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2 GENERAL INFORMATION

2.1 ADMINISTRATIVE INFORMATION

Name:	Railway infrastructure
Registration number and version:	c-PCR-023, version 1.0.0
Programme:	 EPD INTERNATIONAL EPD SYSTEM
Programme operator:	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden Website: www.environdec.com E-mail: support@environdec.com
PCR Moderator:	Susanne Toller, The Swedish Transport Administration (Trafikverket), susanna.toller@trafikverket.se
PCR Committee:	The Swedish Transport Administration: Sofia Miliutenko-Martin, Birgitta Aava Olsson, Åsa Lindgren WSP: Stefan Uppenberg, Malin Bergström, Elisabeth Hochschorner SolidForest: Rubén Jiménez Alstom: Yannick Quincon The Norwegian Public Roads Administration: Bob Hamel Danish Road Directorate: Christian Axelsen, Mads Lenschau
Date of publication and last revision:	2025-04-22 (version 1.0.0) A version history is available in Section 8.
Valid until:	2027-12-19
Schedule for renewal:	This document will be revised upon its expiration. In case a c-PCR is developed by a CEN Product TC, the standard will replace this c-PCR with a transition period of 90 days.
Standards conformance:	For compliance to standards and other documents, see PCR 2019:14.
PCR language(s):	This PCR was developed and is available in English. In case of translated versions, the English version takes precedence in case of any discrepancies.

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2.2 SCOPE

2.2.1 PRODUCT CATEGORY DEFINITION AND DESCRIPTION

This c-PCR covers the assessment of environmental performance of railway infrastructure and the declaration of this performance by an EPD. Railway infrastructure in this context can be represented by an entire railway infrastructure construction project, including track, stations, bridges, tunnels etc., or only a more specific part of railway infrastructure, such as a railway bridge. The product category corresponds to UN CPC 53212, 53221 and 53222.

- 532 Civil engineering works
 - 5321 Highways (except elevated highways), streets, roads, railways and airfield runways
 - 53212 Railways
 - 5322 Bridges, elevated highways and tunnels
 - 53221 Bridges and elevated highways
 - 53222 Tunnels

Additional information on the UN CPC classification is available at <https://unstats.un.org/unsd/classifications/Family/Detail/1074>.

2.2.2 TYPE OF EPD AND INFORMATION MODULES INCLUDED

This c-PCR is primarily developed to be used by railway infrastructure developers that want to develop an EPD to evaluate the environmental impact of an infrastructure project (see 2.2.1 Product category definition and description), either in the *planning/design* phase or for a completed project (*as built*). For a *planning/design* EPD it is strongly recommended to update it to *as built* when the construction project has been finalized. This includes updating to specific data for LCA calculations, see Section 4.7.

The purpose and preconditions for the EPD, including if EPD is valid for *planning/design* or *as built*, shall be declared, see Section 5.4.1.

Following the requirements in PCR 2019:14, an EPD based on this c-PCR shall be of type:

- Cradle to grave and module D (A + B + C + D);

Based on the criteria in PCR 2019:14, an EPD based on this c-PCR may not be of types:

- Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D);
- Cradle to gate with options, modules c1–c4, module D and with optional modules (A1–A3 + C + D and additional modules)
- Cradle to gate (A1–A3);
- Cradle to gate with options (A1–A3 and additional modules);

2.2.3 GEOGRAPHICAL SCOPE

This c-PCR may be used globally.

2.2.4 EPD VALIDITY

See PCR 2019:14.

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3 PCR REVIEW AND BACKGROUND INFORMATION

This c-PCR was developed in accordance with the PCR development process described in the GPI of the International EPD® System, including open consultation and review.

3.1 OPEN CONSULTATION

3.1.1 VERSION 2022-12-19

This c-PCR was available for open consultation from 2022-03-25 until 2022-05-24, during which any stakeholder was able to provide comments by contacting the PCR Moderator and/or the Secretariat.

A web-based meeting was held during the open consultation phase, 12th of May. A selected Open consultation group was invited via e-mail, however it was also announced by the Seceritiat and any interested was welcomed. The meeting informed the stakeholders about the development process and made it possible for participants to present their point of views at the draft.

Stakeholders were invited via e-mail or other means to take part in the open consultation and were encouraged to forward the invitation to other relevant stakeholders. The following stakeholders provided comments during the open consultation and agreed to be listed as contributors in the c-PCR and at www.environdec.com.

- Diego Peñaloza, Peab Anläggning
- Beatriz Garcia Navarro, High Speed 2 Limited
- Yannick Quincon, Altsom
- Albert Jörg and Christian Aichberger, Voestalpine Railway Systems GmbH
- ProRail
- Rob Rouwette, Start2see

3.2 PCR REVIEW

3.2.1 VERSION 2022-12-19

PCR review panel:	<p>The Technical Committee of the International EPD® System. A full list of members is available at www.environdec.com. The review panel may be contacted via info@.environdec.com.</p> <p>Members of the Technical Committee were requested to state any potential conflict of interest with the PCR Committee, and if there were conflicts of interest they were excused from the review.</p>
Chair of the PCR review:	Claudia A. Peña
Review dates:	2022-07-07 until 2022-11-04

3.3 EXISTING PCRS FOR THE PRODUCT CATEGORY

As part of the development of this c-PCR, existing PCRs/c-PCRs and other internationally standardised methods that could potentially act as c-PCRs were considered to avoid unnecessary overlaps in scope and to ensure harmonisation with established methods of relevance for the product category. The existence of such documents was checked among the following EPD programmes and international standardisation bodies:

- International EPD® System. www.environdec.com.

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- The Norwegian EPD Foundation, www.epd-norge.no
- EPD Italy, www.epditaly.it
- The Institut Bauen und Umwelt e.V, ibu-epd.com

Table 1 lists the identified PCRs and other standardised methods.

Table 1 Existing PCRs/c-PCRs and other internationally standardized methods that were considered to avoid overlap in scope and to ensure harmonisation with established methods.

NAME OF PCR/c-PCR/STANDARD	PROGRAMME/ STANDARDISATION BODY	REGISTRATION NUMBER, VERSION NUMBER/DATE OF PUBLICATION	SCOPE
PCR 2013:19 Railways	International EPD System	PCR 2013:19, Version 2.11	UN CPC 532 Civil engineering works UN CPC 5321 Highways (except elevated highways), streets, roads, railways and airfield runways UN CPC 53212 Railways
PCR 2009:03 Rail transport	International EPD System	Version 1.0 (Expired)	UN CPC 53212 Railways
PCR 2013:20 Highways (except elevated highways), streets and roads	International EPD System	PCR 2013:20, Version 2.1	UN CPC 53211 Highways (except elevated highways), streets and road
EPDItaly022, Use of Highways, streets, roads and airfield.	EPD Italy	EPDItaly022, Version 1, Issue date 2021-01-29	UN CPC 53211 Highways (except elevated highways), streets and road
C-PCR-012 (TO PCR 2019:14) Rehabilitation of Highways, streets and roads.	International EPD System	C-PCR-012 (TO PCR 2019:14), Version: 2021-07-09	UN CPC 54211 (General construction services of highways [except elevated highways], streets and roads)
PCR 2019:14-c-PCR-010 c-PCR-010 Guardrails and bridge parapets (2021-02-11)	International EPD System	PCR 2019:14-c-PCR-010	UN CPC 532 Civil engineering works
PCR 2014:02, Building	International EPD System	PCR 2014:02, Version 2.01	UN CPC 531
EN 15978:2011 Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method	CEN, European committee for standardization	STD-82222, Version 1, 2011-11-21	ICS 91.040.01
EN 17472 Sustainability of construction works - Sustainability assessment civil engineering works - Calculation methods	CEN, European committee for standardization	Ref. No. EN 17472:2022 E, February 2022	ICS 91.040.01
PCR 2009:05, Rolling Stock	International EPD System	PCR 2009:05, VERSION 3.04	UN CPC 495
SS-EN 15380-2:2006, Railway applications – Designation system for railway vehicle – Part 2: Products groups	Swedish standards institute	SS-EN 15380-2:2006, version 1	ICS 01.110; 45.060.01

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3.4 REASONING FOR DEVELOPMENT OF C-PCR

This c-PCR was developed to provide requirements and guidelines additional to those in PCR 2019:14 and EN 15804, for developing EPDs for the product category. The c-PCR thereby enables different practitioners to generate consistent results when assessing the environmental impact of products of the same product category, and thereby it supports comparability of products within a product category.

This c-PCR is primarily developed to be used by railway infrastructure developers that are planning a new railway infrastructure (planning/design) or have completed a project (as built), and want to develop an EPD to evaluate the environmental impact of the infrastructure.

The c-PCR replaces PCR 2013:19 Railways, which was based on EN 15804+A1. This c-PCR harmonizes with the c-PCR Template for PCR 2019-14 Construction products, following EN 15804+A2, in the International EPD® System.

3.5 UNDERLYING STUDIES USED FOR C-PCR DEVELOPMENT

The c-PCR is a further development of previous versions (PCR 2013:19 Railways (Version 2.11) and PCR 2009:03 Rail transport) and a significant part of the methodology originates from the earlier versions, and underlying studies to them. Moreover methodological choices made during the development of this c-PCR (declared/functional unit, system boundary, allocation methods, impact categories, data quality rules, etc.) were based on the following underlying studies:

- PCRs/c-PCRs and other internationally standardized methods presented in the table in Section 3.3.
- EPDs of railways and roads of the International EPD® System:
 - Passenger transport service on the Bothnia Railway Line, S-P-00194
 - Freight transport service on the Bothnia Railway Line, S-P-00195
 - Railway infrastructure on the Bothnia Railway Line, S-P-00196
 - Railway track foundations on the Bothnia Railway Line, S-P-00198
 - Railway track on the Bothnia Railway Line, S-P-00200
 - Railway tunnels on the Bothnia Railway Line, S-P-00197
 - Railway bridges on the Bothnia Railway Line, S-P-00199
 - Power, signalling and telecom systems on the Bothnia Line, S-P-00201
 - Environmental Product Declaration for the concept of the NCC Composite bridge, S-P-00627
 - Railway bridge "Arroyo Valchano", S-P-00455
 - N-340 Road, S-P-00516
 - ALSTOM Metro electrification system 1,5kV - rigid catenar, S-P-01375
 - Mainline track Concrete track NBT, S-P-01374
 - WEGH GROUP - ARIANNA SLAB TRACK SYSTEM, S-P-04332
 - Wheel sensor RSR123 & Outdoor equipment, S-P-05367
 - Advanced Counter FAdC R2 Indoor Equipment, S-P-04006
 - Environmental Product Declaration for the pedestrian and bicycle bridge 15-1787-1 over Viskan in project Road 27, S-P-00709
- Guide for LCA of Road and Rail Infrastructure, Report number 2020-09, NordFoU
- Greenhouse Gas Assessment Workbook for Road Projects, Transport Authorities Greenhouse Group

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- A life cycle model for high-speed rail infrastructure: environmental inventories and assessment of the Tours-Bordeaux railway in France, A. de Bortoli, L. Bouhaya, A. Feraille
- Environmental impact assessment of high-speed railway tunnel construction: A case study for five different rock mass rating classes, Rafael Dami'an, Clara I. Zamorano
- Life cycle assessment of roads: Exploring research trends and harmonization challenges, E. Hoxha et.al.
- Life cycle assessment of railways and rail transports – Application in environmental product declarations (EPDs) for the Bothnia Line, Stripple, H. and Uppenberg, S., IVL Swedish Environmental Research Institute, 2010.
- Dokumentasjon VegLCA v5.10B, Norwegian Public Roads Administration
- Klimatkalkyl - Beräkning av infrastrukturens klimatpåverkan och energianvändning i ett livscykelperspektiv, modellversion 7.0 Swedish Transport Administration

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4 GOAL AND SCOPE, LIFE CYCLE INVENTORY AND LIFE CYCLE IMPACT ASSESSMENT

This section provides specific rules, requirements and guidelines for developing an EPD for the product category as defined in Section 2.2.1.

4.1 FUNCTIONAL UNIT

EPDs based on this c-PCR shall use a functional unit. The functional unit for railway infrastructure is defined as "railway infrastructure that enables transport service over the defined Reference Study Period (RSP)."

It is mandatory to include project specific information (see 5.4.3) in the EPD to make it possible to convert results for the functional unit into key performance indicators (KPIs) for reporting, analysis and comparison of environmental performance. Such KPIs can be environmental impact per km of infrastructure, or per performed transport work on the infrastructure.

4.2 REFERENCE STUDY PERIOD (RSP) AND TECHNICAL LIFESPAN (TLS)

Reference study period (RSP) is the time period over which the time-dependent characteristics of the object of assessment are analysed (NS-EN 15978: 2011 and SS-EN 17472:2022). A relevant RSP, for the intended purpose of the EPD (see Section 2.2.2), has to be defined and declared for the assessment. All activities, such as maintenance, repair, replacement and refurbishment as well as operational energy and water use, that contribute to the environmental impact over the RSP shall be included in the assessment (see Section 4.3.3). Methods and assumptions used for defining the RSP shall be declared.

Technical lifespan (TLS) (see GPI, v.4.0) for a component of the railway infrastructure is the estimated time to when the component has to be replaced or refurbished to maintain the functional and technical performance of the railway. Definition of TLS shall be declared and used for assessment of maintenance and replacement of construction products during RSP. In the assessment, the number of replacements of specific components shall be rounded up to the nearest higher integer for the quota RSP/TLS. Replacement of components with TLS longer than RSP shall not be included in the assessment. Methods and assumptions used for definition of TLS shall be declared.

4.3 SYSTEM BOUNDARIES

EPDs that are developed based on this c-PCR shall cover product stage (A1-A3), construction process stage (A4-A5), use stage (B1-B7), end-of-life stage (C1-C4) as well as benefits and loads beyond the system boundary (D). The scope allowed by this c-PCR, and requirements for excluding information modules, must be aligned with PCR 2019:14 and EN 15804.

In case of conflicts between PCR for subsystems of the infrastructure (infrastructure components, e.g sleepers) and this c-PCR, system boundaries specified in this c-PCR shall be used.

The following subsections describe examples of processes included in the covered information modules, as guidance to the EPD developer. For detailed information on each module, see EN 15804 (Section 6.3.5).

4.3.1 PRODUCT STAGE: MODULES A1-A3

See PCR 2019:14 and Section 6.3.5.2 of EN 15804.

Guiding examples of processes to include in A1-A3:

- Manufacturing of products and co-products for:
 - Substructure; e.g. crushed rock, concrete piles, steel sheet piles, drainage and storm water pipes etc.
 - Tunnels; e.g. shotcrete, explosives, drainage mats, reinforcement bolts etc.
 - Bridges; e.g. concrete, reinforcement bars, steel beams etc.
 - Track; e.g. ballast, sleepers, rail, switches etc.
 - Power supply system; e.g. catenary system, distribution station, power feed cable, transformers etc.

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- Signalling system; e.g. cables, signals, signs, train control system etc.
- Telecom system; e.g. mobile masts, information systems etc.
- Stations; e.g. buildings, platforms, lighting, train and locomotive heating facilities etc.
- Other installations; e.g. cable ducts, noise barriers, wildlife fences, parapets etc.

4.3.2 CONSTRUCTION PROCESS STAGE: MODULES A4-A5

See PCR 2019:14 and Section 6.3.5.3 of EN 15804.

Guiding examples of processes to include in A4-A5:

- Deforestation and clearing activities
- Earth works, rock excavation, rock and soil filling, drainage works, geotechnical reinforcement, concrete grouting, shotcrete works, installation work and other construction processes and transport of components/products for:
 - Substructure
 - Tunnels
 - Bridges
 - Track
 - Power supply system
 - Signalling system
 - Telecom system
 - Stations
 - Other installations
- Transport and treatment of waste generated during construction

4.3.3 USE STAGE: MODULES B1-B7

See PCR 2019:14 and Section 6.3.5.4 of EN 15804.

Guiding examples of processes to include in B1-B7:

- B1, Use; e.g. any emissions to the environment during anticipated use of railway infrastructure, such as release of substances from wear of rails etc.
- B2, Scheduled maintenance; e.g. ballast cleaning, rail grinding, winter maintenance etc.
- B3, Scheduled repair; e.g. transport and replacement of spare parts, transport of work force etc. Including manufacturing of products and co-products for repair.
- B4, Scheduled replacement; e.g. activities involved in planned replacement of rail and sleepers, including manufacturing and transport of products and co-products for replacements and transport of work force etc.
- B5, Refurbishment; e.g. excavation work, geotechnical reinforcement etc.
- B6, Operational energy use; e.g. electricity for switch heating, lighting, pumping of storm water and ground water etc.
- B7, Operational water use; e.g. cleaning of bridges and other infrastructure parts etc.

4.3.4 END-OF-LIFE (EOL) STAGE: MODULES C1-C4

See PCR 2019:14 and Section 6.3.5.5 of EN 15804. The choice of the railway infrastructure's end-of-life scenario shall be described in the EPD. The EPD-developer should consider national standards and policies while creating a scenario.

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4.3.5 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY: MODULE D

See PCR 2019:14 and Section 6.4.3.3 of EN 15804. The choice of scenario for benefits and loads beyond the system boundary shall be described in the EPD. The EPD-developer should consider national standards and policies while creating a scenario.

4.3.6 OTHER BOUNDARY SETTING

See PCR 2019:14 and EN 15804.

4.4 SYSTEM DIAGRAM

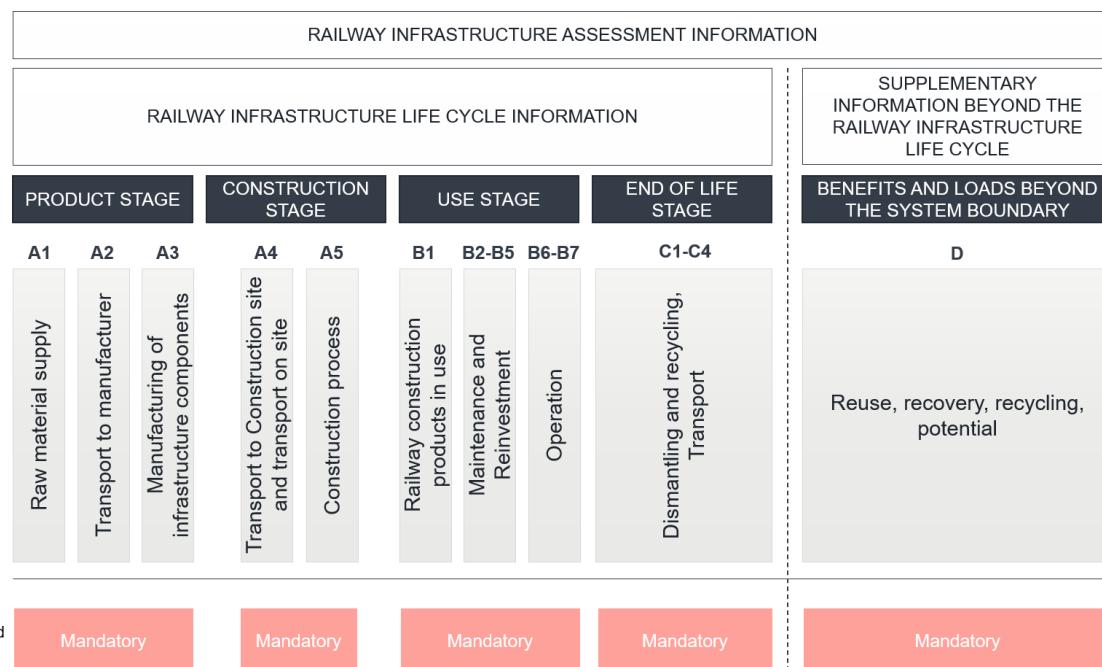


Figure 3 System diagram illustrating the processes that are included in the product system, divided into life-cycle stages and information modules.

4.5 CUT-OFF RULES

See PCR 2019:14 and EN 15804.

4.6 ALLOCATION RULES

See PCR 2019:14 and EN 15804.

4.7 DATA QUALITY REQUIREMENTS

See PCR 2019:14 and EN 15804.

For a *planning/design* EPD, the EPD owner shall describe how data quality requirements are met. In such case, the EPD owner is allowed to use available inventory data for comparable technologies existing on the market (e.g. data from competitors or other manufacturers) and qualify them as specific data (see PCR 2019:14 version 2.0.0, or Section 6.1.2 in GPI v.4.0 if an earlier version of PCR 2019:14 is used).

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4.8 ENVIRONMENTAL PERFORMANCE INDICATORS

See PCR 2019:14 and EN 15804.

In infrastructure projects, A5 activities (see Section 4.3.2) can have significant impact on net emissions of greenhouse gases through land use, land-use change and forestry (so called LULUCF activities). Therefore it is important to assess impact on carbon stored in living biomass, impact on carbon stored in soil and present the impact as GWP-LULUC in the EPD (EN 15804, Annex C, C.2.5).

4.9 INCLUDING MULTIPLE PRODUCTS IN THE SAME EPD

See PCR 2019:14.

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5 CONTENT AND FORMAT OF EPD

See PCR 2019:14.

5.1 EPD LANGUAGE

See PCR 2019:14.

5.2 UNIT AND QUANTITIES

See PCR 2019:14.

5.3 USE OF IMAGES IN EPD

See PCR 2019:14.

5.4 EPD REPORTING FORMAT

See PCR 2019:14. Sub-sections below replaces corresponding sections in PCR 2019:14.

5.4.1 PRODUCT INFORMATION

Required mandatory and recommended information about the EPD owner is given in the table below.

Mandatory information	Contact information to EPD owner, infrastructure manager and owner (can be the same). An environmental management system may be cited.
	Short description of the organisation, including information on products- or management system-related certifications (e.g. ISO Type I ecolabels, ISO 9001- and 14001-certificates, EMAS-registrations etc.) and other relevant work the organisation wants to communicate (e.g. SA 18000, supply-chain management, social responsibility - SR etc.)
Recommended information	If the infrastructure comprises parts with different infrastructure managers and/or different technical characteristics, all the parts and infrastructure managers should be described.
	Name and contact information of organisation carrying out the underlying LCA study.

Required mandatory and recommended information about the product is given in the table below.

Mandatory information	The name, location, boundaries and design of the infrastructure shall be described. A simple visual figure or image of the infrastructure shall be given. The information may be based on a network statement. Description of the intended use of the infrastructure. The extent of the infrastructure construction project shall be described. If several sub-projects is included, it shall be described. References to any relevant websites for more information or explanatory materials.
	Information on if the EPD has been developed for a project in the planning/design phase or a completed project (as built). EPDs for project in the planning/design phase shall have the following disclaimer on the coverage: <i>Project in planning/design phase</i> .

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	Unambiguous identification of the product according to the UN CPC scheme system, standards, concessions or other means.
	Functional unit
	All assumptions regarding definitions of RSP and TLS.
	System diagram of the processes included in the LCA, divided into the life cycle stages and information modules defined according to EN 15804. This diagram should also describe geography, specific data and data variation. See Table 3 in PCR 2019:14, v.1.2.
	Declaration of the year(s) representative for the inventory for the A and B modules
	Reference to the main database(s) for generic data and LCA software used, if relevant.
	If the purchased electricity used in the manufacturing process of module A3 accounts for more than 30% of the GWP-GHG results of modules A1-A3, the energy sources of this electricity use and its climate impact (in kg CO ₂ eq./kWh using the GWP GHG indicator) shall be declared in the EPD.
	Km of railway
	Km of single track railway
	Annual amount of passenger-kilometres for passenger transport
	Annual amount of net tonne-kilometres for freight transport
	Design speed
Additional information may be given if relevant. For example:	Geology, geography and climate
	Share of open section, tunnel sections and bridge sections
	Minimum infrastructure gauges
	Minimum radius of curvature
	Minimum, average and maximum gradient
	Track gauge
	Maximum track stressing
	Minimum platform length
	Platform height
	Power-supply voltage
	Catenary geometry
	Signalling system characteristics
	Axle loading
	Maximum train length

5.4.2 CONTENT DECLARATION

The EPD shall include a content declaration of the construction products covering relevant materials and substances included in the infrastructure itself. Resources which contribute 1% or more of the different resource use categories, shall be listed and detailed. Content of regulated substances within the geographical regions for which the EPD is valid shall be declared as well as the geographical validity of the EPD.

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If there is more than 5% (post-consumer) recycled or biogenic content in the product, this shall be declared (if below 5%, this may be declared). If there is more than 5% biogenic content in the packaging material, this shall be declared (if below 5%, this may be declared)22. Also (post-consumer) recycled content of the packaging material may be declared.

The content declaration shall also include information on the environmental and hazardous properties of substances contained in products, for substances in the Candidate List of Substances of Very High Concern (SVHC) which exceeds the limits for registration with the European Chemicals Agency (i.e., if the substance constitute more than 0.1% of the weight of the product). The Candidate List of SVHC is available via the European Chemicals Agency.

5.4.3 ADDITIONAL ENVIRONMENTAL INFORMATION

In addition to information according to PCR 2019:14, impacts on biodiversity, noise and vibrations, water management and environmental impact from utilization (module B8), shall be described. It is mandatory to describe each of these topics, and below is listed the information on each topic that should be included, depending on relevance for the specific railway infrastructure.

Impacts on biodiversity, Noise and vibrations and Water management is particularly relevant on a local level since a specific railway project/system can have significant local impact on those aspects. Therefore it is recommended to follow local, regional or national methods and legislation to describe impact.

Any additional environmental information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information.

Impacts on biodiversity

Impact on the following core principles for biodiversity in infrastructure should be described in the EPD:

- Permeability of transport corridors
- Safety and mortality
- Disturbance of Surrounding habitats
- Conservation of habitats
- Natural flora and fauna
- Created natural values

Noise and vibrations

The following parameters should be addressed in the EPD:

- Direct impact from infrastructure construction, maintenance and operation as well as from traffic, according to national set of regulations such as guide-line/limit/threshold values and using national methods of measurement or modelling.
- Impacts on relevant areas such as residential areas, sensitive biotopes or recreational areas, if relevant with comparison to a business as usual scenario.
- Undertaken measurements for improvement of impacts from traffic noise and vibrations.
- Other impacts not shown by chosen indicators.

Water management

The following should be addressed in the EPD:

- Environmental impacts on water flows, groundwater levels, and water quality, both temporary under construction and permanent during operation of the infrastructure, shall be described.
- Measures taken to ensure that an acceptable ecological status is maintained in water flows, groundwater levels, and water quality during construction and operation phase of the infrastructure should be described.

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- A description how non-harmful groundwater levels could be maintained during operation of the infrastructure.
- A description of the systems and routines used to ensure that environmental impacts on water flows, groundwater levels, and water quality, both temporary during construction and during operation of the infrastructure, are kept at acceptable levels.

Environmental impact from utilization, module B8

Environmental impact from users' utilization, defined as module B8 in EN 17472:2022 (Sustainability of construction works – Sustainability assessment of civil engineering works – Calculation methods), shall be described in the EPD. Scenarios for B8, used for the assessment, shall be described. A scenario can describe e.g. energy use for trains using a railway, depending on gradients, speed limit, choice of location etc. A scenario shall only consider normal operation and the infrastructure's intended use.

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6 LIST OF ABBREVIATIONS

See abbreviations listed in PCR 2019:14, Section 6.

Added glossary in this c-PCR:

KPI	Key performance indicator
LULUC	Land use and land use change
LULUCF	Land use, land-use change and forestry
RSP	Reference study period (RSP) is the time period over which the time-dependent characteristics of the object of assessment are analysed (NS-EN 15978: 2011 and SS-EN 17472:2022).
TLS	Technical lifespan (TLS) is the average time for which the product has been designed or proven to last (GPI, v.4.0).

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7 REFERENCES

Bortoli A, Bouhaya L, Feraille AF (2020) A life cycle model for high-speed rail infrastructure: environmental inventories and assessment of the Tours-Bordeaux railway in France, International Journal of Life Cycle Assessment.

CEN (2011) EN 15978:2011 Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method, Version 1.

CEN (2021) EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

CEN (2022) EN 17472:2022, Sustainability of construction works – Sustainability assessment of civil engineering works – Calculation methods.

Damián R, Zamorano CI (2022) Environmental impact assessment of high-speed railway tunnel construction: A case study for five different rock mass rating classes, Transportation Geotechnics.

Dahlstrøm Andvik O, et al. (2022) Dokumentasjon VegLCA v5.10B, Utgave: 1, Norwegian Public Roads Administration.

EPD Australia LTD (2022) Technical guidance for developing EPDs according to EN 15804+A2:2019 for asphalt mixtures – Australia, EPD Australia LTD.

EPD International (2009) PCR 2009:03 Rail transport, version 1.0 (expired).

EPD International (2014) EPD Passenger transport service on the Bothnia Railway Line, S-P-00194, Trafikverket (expired).

EPD International (2014) EPD Freight transport service on the Bothnia Railway Line, S-P-00195, Trafikverket (expired).

EPD International (2014) EPD Railway infrastructure on the Bothnia Railway Line, S-P-00196, Trafikverket (expired).

EPD International (2014) EPD Railway track foundations on the Bothnia Railway Line, S-P-00198, Trafikverket (expired).

EPD International (2014) EPD Railway track on the Bothnia Railway Line, S-P-00200, Trafikverket (expired).

EPD International (2014) EPD Railway tunnels on the Bothnia Railway Line, S-P-00197, Trafikverket (expired).

EPD International (2014) EPD Railway bridges on the Bothnia Railway Line, S-P-00199, Trafikverket (expired).

EPD International (2014) EPD Power, signalling and telecom systems on the Bothnia Line, S-P-00201, Trafikverket (expired).

EPD International (2014) EPD Environmental Product Declaration for the concept of the NCC Composite bridge, S-P-00627, NCC AB, (expired).

EPD International (2015) EPD Railway bridge "Arroyo Valchano", S-P-00455, ACCIONA Infraestructuras S.A.

EPD International (2015) EPD N-340 Road, S-P-00516, ACCIONA Infraestructuras S.A.

EPD International (2015) Environmental Product Declaration for the pedestrian and bicycle bridge 15-1787-1 over Viskan in project Road 27, S-P-00709, NCC AB.

EPD International (2018) EPD ALSTOM Metro electrification system 1,5kV - rigid catenar, S-P-01375, ALSTOM Transport SA (expired).

EPD International (2018) EPD Mainline track Concrete track NBT, S-P-01374, ALSTOM Transport SA (expired).

EPD International (2019) PCR 2013:20 Highways (except elevated highways), streets and roads, Version 2.1.

EPD International (2019) PCR 2013:19 Railways, Version 2.11.

EPD International (2019) PCR 2014:02 Building, Version 2.01.

EPD International (2021) WEGH GROUP - ARIANNA SLAB TRACK SYSTEM, S-P-04332, Wegh Group S.p.A.

EPD International (2021) General Programme Instructions of the International EPD System. Version 4.0, dated 2021-03-29.
www.environdec.com.

EPD International (2021) PCR 2019:14-c-PCR-010 c-PCR-010 Guardrails and bridge parapets, Version 2021-04-23.

EPD International (2021) C-PCR-012 (TO PCR 2019:14) Rehabilitation of Highways, streets and roads., Version: 2021-07-09.

RAILWAY INFRASTRUCTURE

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EPD International (2021) PCR 2009:05 Rolling Stock, Version 3.04.

EPD International (2022) PCR 2019:14 Construction products, version 1.2.

EPD International (2022) EPD Wheel sensor RSR123 & Outdoor equipment, S-P-05367, Frauscher Sensortechnik GmbH.

EPD International (2022) EPD Advanced Counter FAdC R2 Indoor Equipment, S-P-04006, Frauscher Sensortechnik GmbH.

EPD International (2025) General Programme Instructions of the International EPD System. Version 5.0.1, dated 2025-02-27.
www.environdec.com.

EPD International (2022) PCR 2019:14 Construction products, version 2.0.0. www.environdec.com.

EPD Italy (2021) EPDIItaly022, Use of Highways, streets, roads and airfield, Version 1, Issue date 2021-01-29.

Hoxha et al. (2021) Life cycle assessment of roads: Exploring research trends and harmonization challenges, Science of the Total Environment.

ISO (2006a) ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

ISO (2006b) ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework.

ISO (2006c) ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines.

ISO (2017) ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services.

NordFoU (2020) Guide for LCA of Road and Rail Infrastructure, Report number 2020-09.

Stripple H, Uppenberg S (2010), Life cycle assessment of railways and rail transports – Application in environmental product declarations (EPDs) for the Bothnia Line, Report B1943, IVL Swedish Environmental Research Institute.

Stripple H (2001) Life Cycle Assessment of Road A Pilot Study for Inventory Analysis, Second Revised Edition, IVL Swedish Environmental Research Institute.

Swedish standards institute (2006) SS-EN 15380-2:2006, Railway applications – Designation system for railway vehicle – Part 2: Products groups, version 1.

Toller S (2020) Klimatkalkyl - Beräkning av infrastrukturens klimatpåverkan och energianvändning i ett livscykelperspektiv, modellversion 7.0, Swedish Transport Administration.

Transport Authorities Greenhouse Group (2013) Greenhouse Gas Assessment Workbook for Road Projects.

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8 VERSION HISTORY OF C-PCR

VERSION 2022-12-19

Original version of the c-PCR.

VERSION 2024-04-30

Updated validity period to align with extended validity of PCR 2019:14 version 1.3.4.

VERSION 1.0.0, 2025-04-22

- Updated with prolonged validity, until five years from the original publication of the PCR.
- Changed from version date to version number.
- Other editorial changes and clarifications, e.g., related to the use of the c-PCR (see Section 1.2).
- Removed references to specific sections of PCR 2019:14, as the sections of PCR 2019:14 changed as of the publication of version 2.0.0 in 2025-04-07 and as this c-PCR is applicable together with any version of PCR 2019:14.

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