



 movia

Project on Life Cycle Assessment for buses



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Why this project?

- A green transition of public bus transit is requested – strong political desire for cleaner public transit and cleaner cities
- Large scale deployment of electric buses in the Nordic countries
- Increasing public request for carbon footprint, resource usage and environmental impacts from the manufacturing of buses
- PTA lack information on such issues
- Existing KPIs for environmental performance no longer applicable as award criteria



What was the project about?

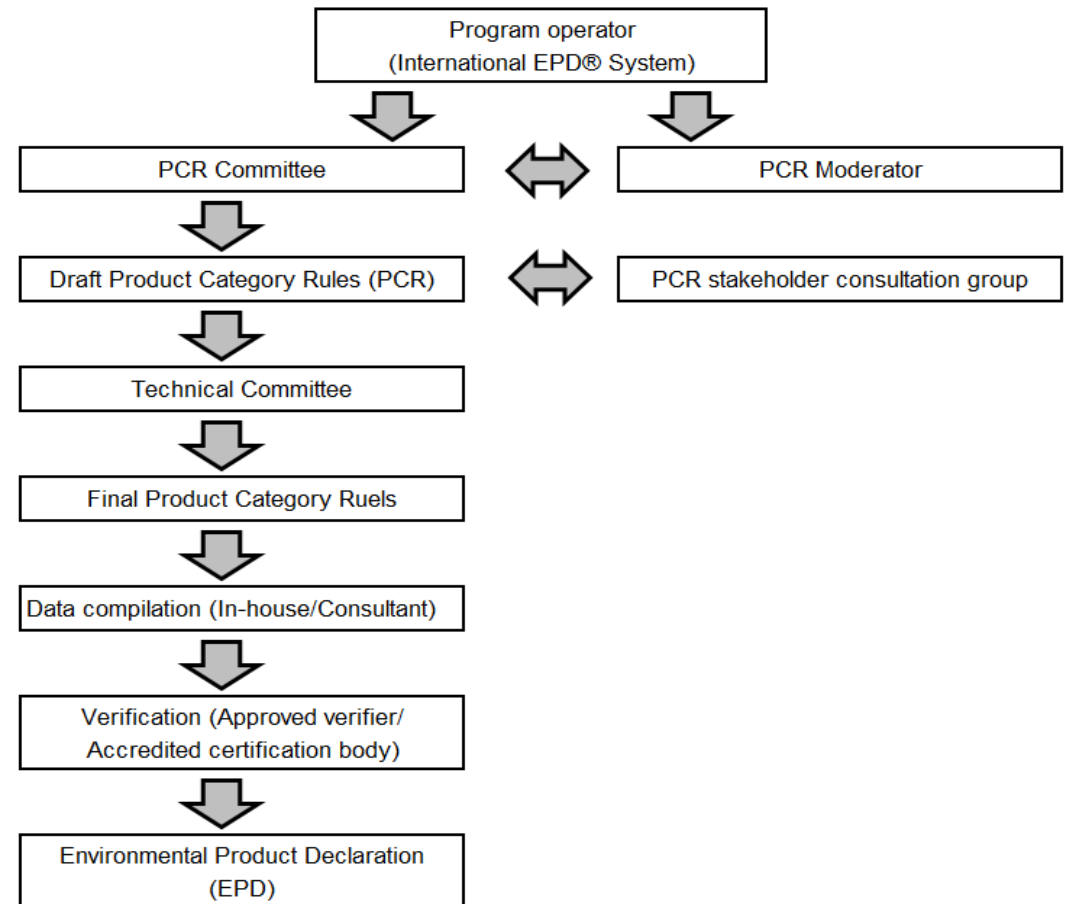
- Purpose: to facilitate the provision of a product declaration for buses based on life cycle assessment
- Project included four phases:
 1. Forming of user group (16 Nordic PTAs with fleet of >12,000 buses)
 2. Involvement of the bus industry
 3. Development of common approach to life cycle assessment (LCA) of buses
 4. Documentation of LCA performance in future tenders



Possible approach

- The ISO 14025 provides guidance on how to make fair comparison among products of the same category
- ISO 14025 is based upon ISO 14040/14044 for life cycle assessment
- ISO 14025 requires a *program operator* to control the environmental declaration program
- International EPD System is an example on program operator
- Stakeholders agree on Product Category Rules (PCR)
- Based upon PCR, companies may prepare Environmental Product Declaration

Process for development of environmental product declaration



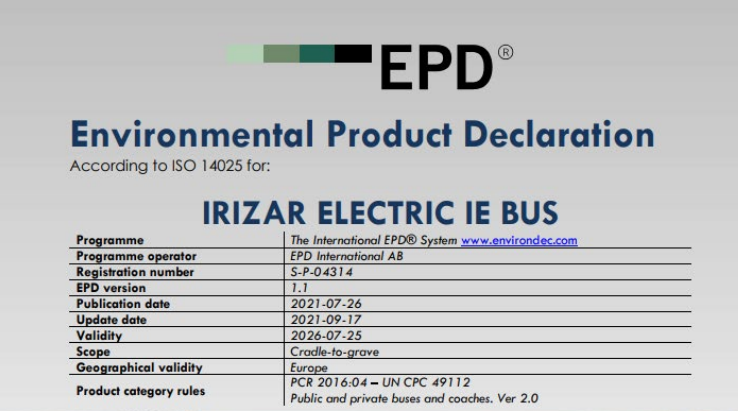
Cooperation with bus industry

- Dialogue with bus industry under the auspices of UITP VEI Committee
- Review of initiatives supporting LCA for buses
- Recommendation from project to develop Environmental Product Declaration (EPD) bases upon common Product Category Rules (PCR) for buses




Lack of support for common EPD

- Not possible to reach common understanding with UITP VEI Committee to develop LCA methodology based upon ISO 14025
- Challenges according to bus industry:
 - Existing PCR for buses not suited for EPD for electric vehicles
 - Demand for publication of EPD
 - Requirement for third-part verification
 - Lack of supply chain data
 - Risk for using EPD as contract award criteria - not possible to compare LCA performance between manufacturers




The image shows the top portion of an EPD document. It features the EPD logo (a green bar with a black square) and the text 'EPD® Environmental Product Declaration'. Below this, it states 'According to ISO 14025 for: IRIZAR ELECTRIC IE BUS'. A table provides details about the programme, operator, registration number, version, dates, validity, scope, and geographical validity.

Programme	The International EPD® System www.envirodec.com
Programme operator	EPD International AB
Registration number	S-P-04314
EPD version	1.1
Publication date	2021-07-26
Update date	2021-09-17
Validity	2026-07-25
Scope	Cradle-to-grave
Geographical validity	Europe
Product category rules	PCR 2016:04 – UN CPC 49112 Public and private buses and coaches, Ver 2.0



The image shows a white Irizar electric bus driving on a road. The bus has 'Irizar ie bus' written on its front. The background shows a modern building and a clear sky.



Irizar e-mobility
for a better life

LCA Questionnaire

- Hot spot approach applied – what are the most important environmental impacts?
- Questionnaire addressing:
 - Compliance with REACH regulation
 - Quality of carbon footprint studies
 - Material usage
 - Environmental management
 - Supply chain management
 - Design for recyclability
 - Impact from refrigerants with high Global Warming Potential

1 Carbon footprint studies

- 1.1 Do you have a carbon footprint study for the **entire bus**?
 - 1.1.0 Does the carbon footprint study include the bus's traction battery?
 - 1.1.1 Please specify the CO₂-eq emission from the production of the bus (cradle to gate)
 - 1.1.2 *Please provide a copy of the carbon footprint study as Annex B1*
 - 1.1.3 Is the study made in accordance with ISO 14040/14044, ISO 14067, the GHG protocol, or another standard in line with ISO 14040/14044?
 - 1.1.3.1 Is the study third-party reviewed by an independent verifier?
 - 1.1.3.1.1 Is the independent verifier an expert in LCA and methodology for LCA work?
 - 1.1.3.1.1.1 *Please provide documentation for the independent verification of the*
- 1.2 Do you have a carbon footprint study for the **bus's traction battery**?
 - 1.2.1 Please specify the CO₂-eq emission from the production of the bus (cradle to gate)
 - 1.2.2 *Please provide a copy of the carbon footprint study as Annex B3*
 - 1.2.3 Is the study made in accordance with ISO 14040/14044, ISO 14067, the GHG protocol, or another standard in line with ISO 14040/14044?
 - 1.2.3.1 Is the study third party reviewed by an independent verifier?
 - 1.2.3.1.1 Is the independent verifier an expert in LCA and methodology for LCA work?
 - 1.2.3.1.1.1 *Please provide documentation for the independent verification of the carbon footprint study as Annex B4*

Conclusions

- From 2023 financial discount of submitted financial offer if score from LCA Questionnaire achieves threshold value
- Advantage for bus manufacturers with common approach
- Questionnaire gives information that will not be obtained from existing PCR/EPD
- Difficult to understand LCA's assessment of environmental impacts from products
- Important to send clear signal to market that PTA's need information on environmental and climate impact throughout bus's life cycle
- Untapped potential for regulation





Se inden du træder
NØDUDGANG

Linkker

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**Nyd
luften**

Elbussen
har ingen
udstødning

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