PROCEEDR

OPTIMISING RESOURCE USE
FOR ROADSIDE INFRASTRUCTURES

Final programme conference

Prof. Holger Wallbaum (Project coordinator)
Simin Tavajoh, Marco Conter

Utrecht, March 12-13, 2024

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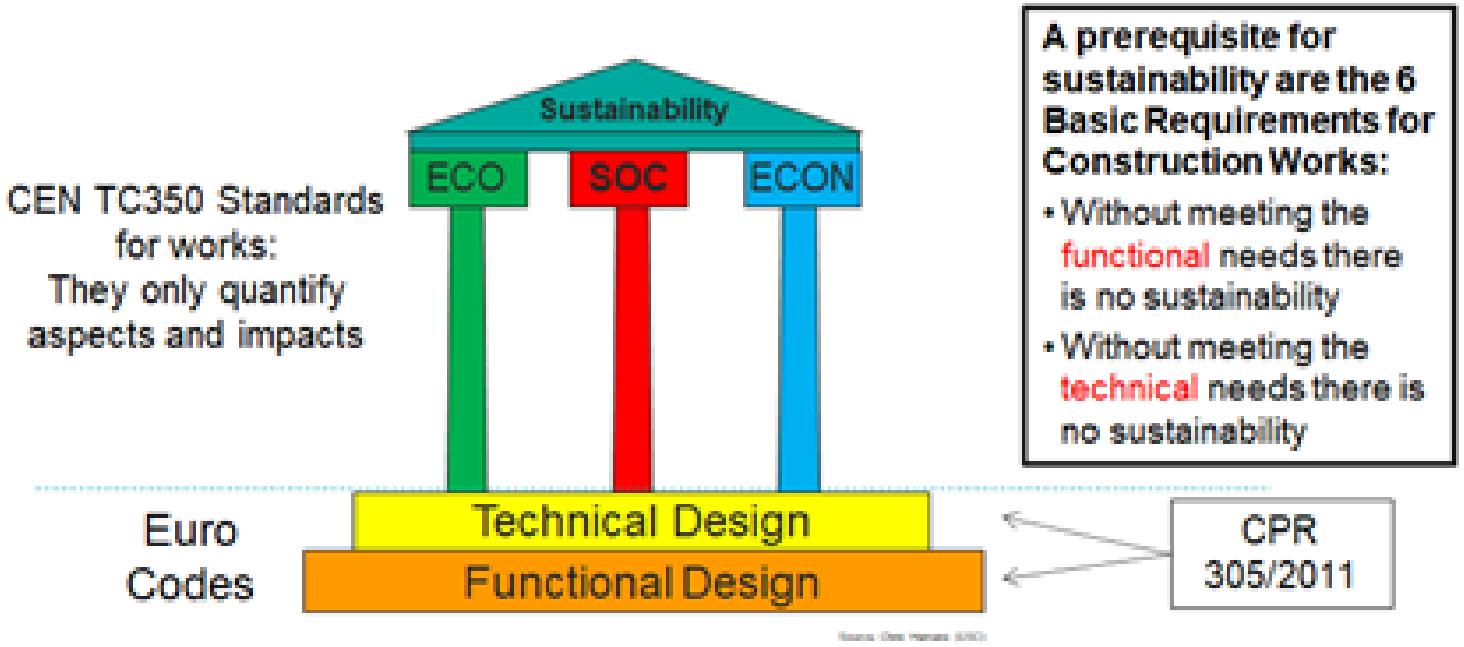
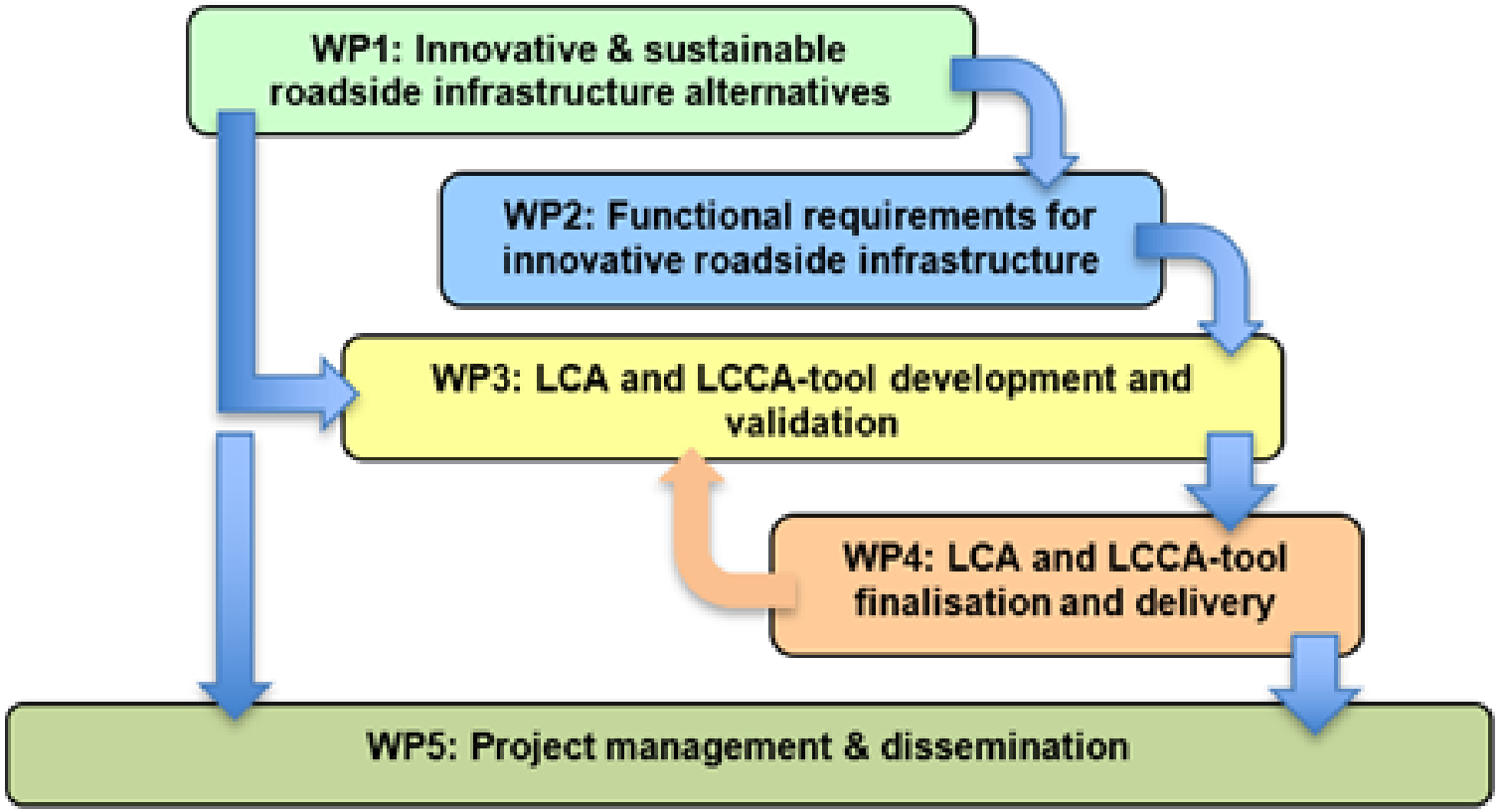
Goals of the project

This research project aims to create two tools to enable National Road Administrations to identify innovative and sustainable solutions to facilitate the transition from a linear to a circular economy in the field of roadside infrastructure.

Study objects: **noise barriers and safety barriers**


Sustainability
ECO
SOC
ECON
CEN TC350 Standards for works: They only quantify aspects and impacts
Euro Codes
Technical Design
Functional Design
CPR 305/2011
A prerequisite for sustainability are the 6 Basic Requirements for Construction Works:
• Without meeting the functional needs there is no sustainability
• Without meeting the technical needs there is no sustainability

Project structure



Objectives of WP1

- Summarise the multi-life **cycle-based tools** currently available
- Collect **best practices on innovative and sustainable roadside infrastructure solutions**, including bio-based, composite and/or recycled materials used for noise & safety barriers
- Produce a **state-of-the-art survey** on roadside infrastructure equipment
- Define a **methodology or ranking criteria** for the selection of sustainable and innovative solutions and select a relevant sample of application cases
- Develop **recommendations** based on the evaluation of the application cases

Task 1.1: Overview and critical assessment of LCA/LCCA road infrastructure tools and roadside infrastructures (Part 1 – Literature review)

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CEDR TRANSNATIONAL RESEARCH PROGRAMME 2020

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The Literature review of LCA tools for roadside infrastructures

Deliverable D1.1
Version 0.2
Date: 16.05.2022
Dissemination level: tbd

Identified relevant tools:

4.1	VegLCA
4.2	EFFEKT
4.3	LICCER
4.4	JOULESAVE
4.5	ECO-it
4.6	Dubocalc
4.7	InfraLCA

Task 1.1: Overview and critical assessment of LCA/LCCA road infrastructure tools and roadside infrastructures (Part 2 – NRA survey)

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Existing LCA/LCCA-tools and roadside infrastructure solutions including a SWOT analysis of existing tools – NRA survey results

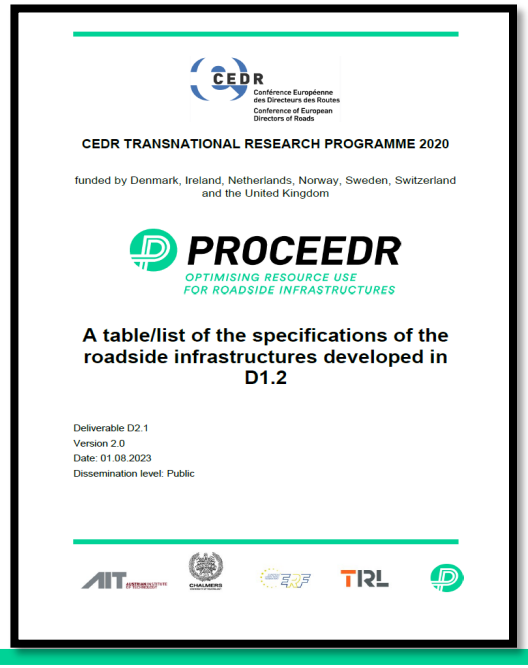
Deliverable D1.2 – Part 2
Version 0.1
Date: 16.05.2022
Dissemination level: tbd

Task 1.2: Survey results for Industry stakeholders

- Online survey using online tool SurveyMonkey
- Final results collected
  - 17 relevant questions
  - 114 different companies approached
  - **48 positive replies**
  - **Geographic distribution:** Sweden, Norway, Austria, UK, France, Poland, Italy, Luxembourg, Germany, The Netherlands, Spain, Croatia, Belgium → **13 different European countries**

Objectives of WP2

- Specify the **functional and technical requirements** of the selected roadside infrastructure solutions in WP1;
- Assess and define the **assumptions regarding production, construction, maintenance, end-of life, transportation processes**.
- Provide an input for the LCA-/LCCA-tool development in WP3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A table/list of the specifications of the roadside infrastructures developed in D1.2

Deliverable D2.1
Version 2.0
Date: 01.08.2023
Dissemination level: Public

Objectives of WP3

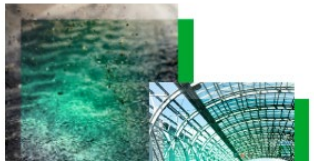
- Develop the **prototype** of
  - an **online LCA-/LCCA-tool** and
  - a **stand-alone software tool**

  to assess the resource efficiency and circularity of roadside infrastructures.

Objectives of WP4

- Finalise the **prototype** of
  - an **online LCA-/LCCA-tool** and
  - a **stand-alone software tool**

  to assess the resource efficiency and circularity of roadside infrastructures.



Our aim is to help national road authorities reduce their environmental impacts and contribute to the circular economy.

PROCEEDR project will study Noise and Safety

Project Website

- The website of the project has been developed and it is accessible at the following link: https://proceedr.project.cedr.eu/
- The website contains the general information about the project and it will display the deliverables, other publications plus information about the events/webinar that the consortium will hold.

Dissemination and Communication plan

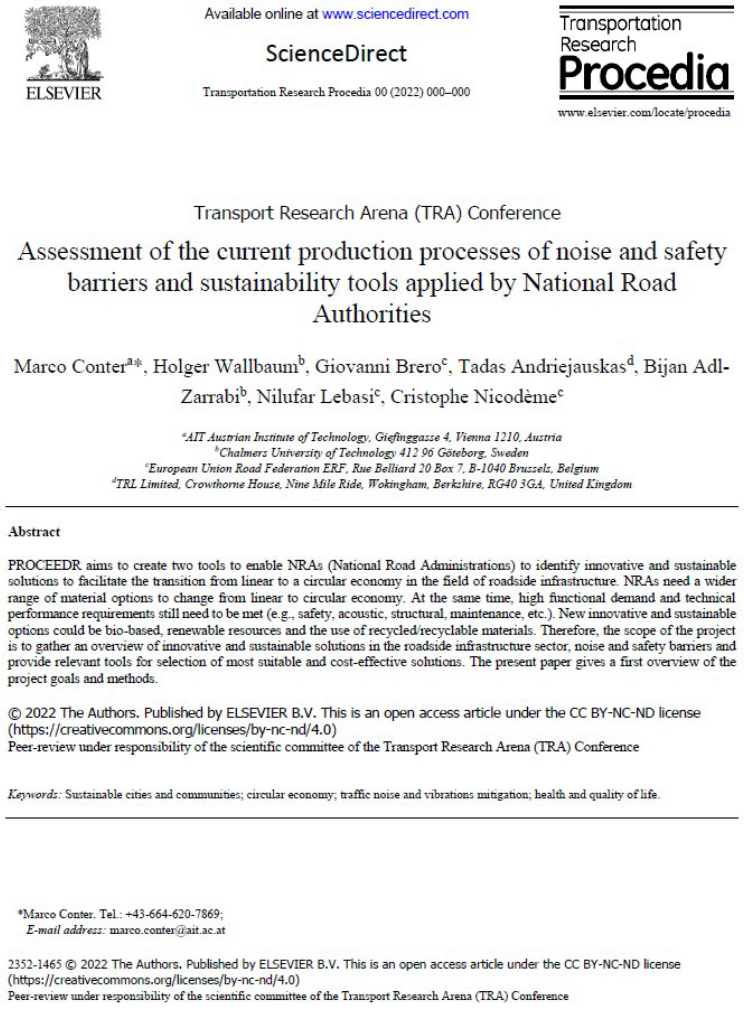
Different dissemination materials have been identified:

a. Website
b. Poster
c. Articles in specialised media
d. Participation to events and conference abstracts
e. Workshops/webinars
f. Final conference

Scientific papers

One paper have been submitted for the **9th Transport Research Arena (TRA) Lisbon 2022** taking place in Portugal:

"Assessment of the current production processes of noise and safety barriers and sustainability tools applied by National Road "



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Transport Research Arena (TRA) Conference

Assessment of the current production processes of noise and safety barriers and sustainability tools applied by National Road Authorities

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Abstract

PROCEEDR aims to create two tools to enable NRAs (National Road Administrations) to identify innovative and sustainable solutions to facilitate the transition from linear to a circular economy in the field of roadside infrastructure. NRAs need a wider range of material options to change from linear to circular economy. At the same time, high functional demand and technical performance requirements still need to be met (e.g., safety, acoustic, structural, maintenance, etc.). New innovative and sustainable options could be bio-based, renewable resources and the use of recycled/recyclable materials. Therefore, the scope of the project is to gather an overview of innovative and sustainable solutions in the roadside infrastructure sector, noise and safety barriers and provide relevant tools for selection of most suitable and cost-effective solutions. The present paper gives a first overview of the project goals and methods.

Keywords: Sustainable cities and communities; circular economy; traffic noise and vibrations mitigation; health and quality of life.

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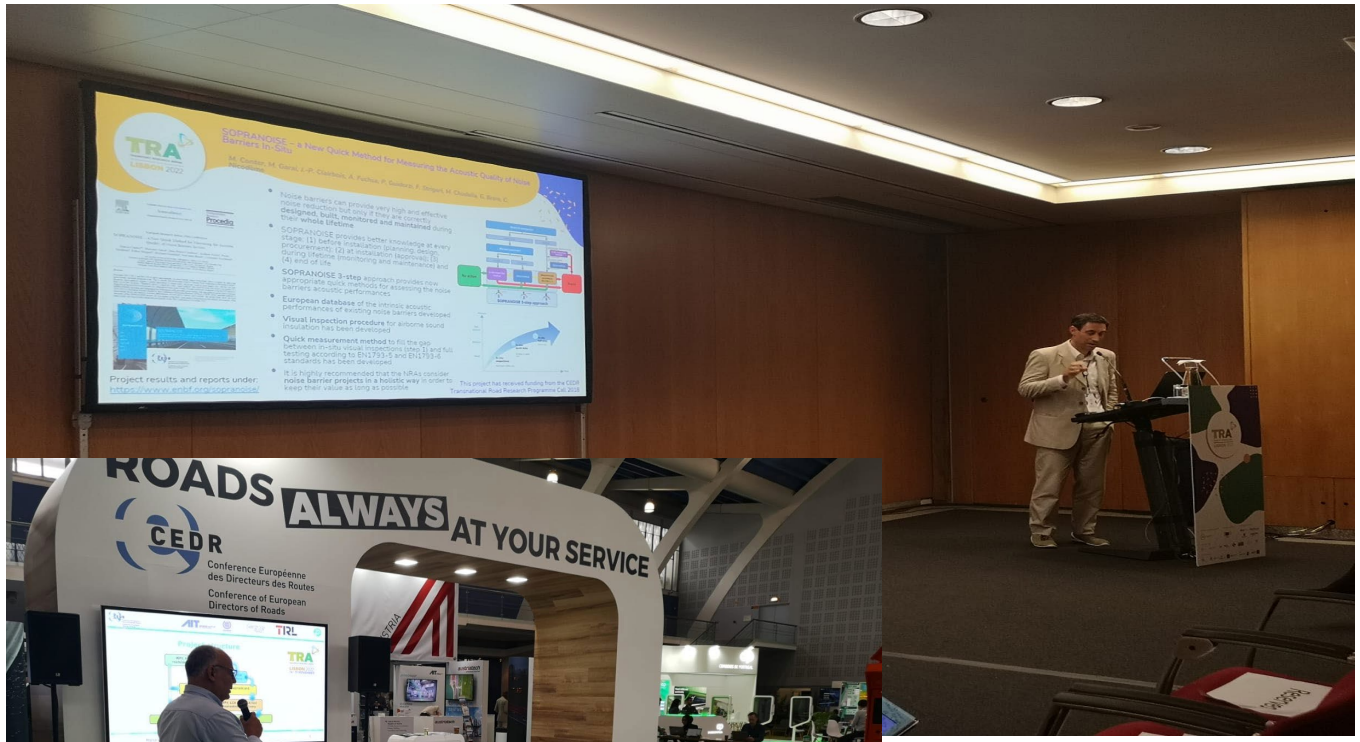
Presentations

The final project outcomes will be presented at the **10th Transport Research Arena (TRA) Dublin 2024.**



Meeting with stakeholders

There were two meetings held with relevant stakeholders:

- Meeting with Road restraint systems (RRS) manufacturer (ERF Working Group on RRS)
- Meeting with noise barriers national associations (European Noise Barrier Federation)

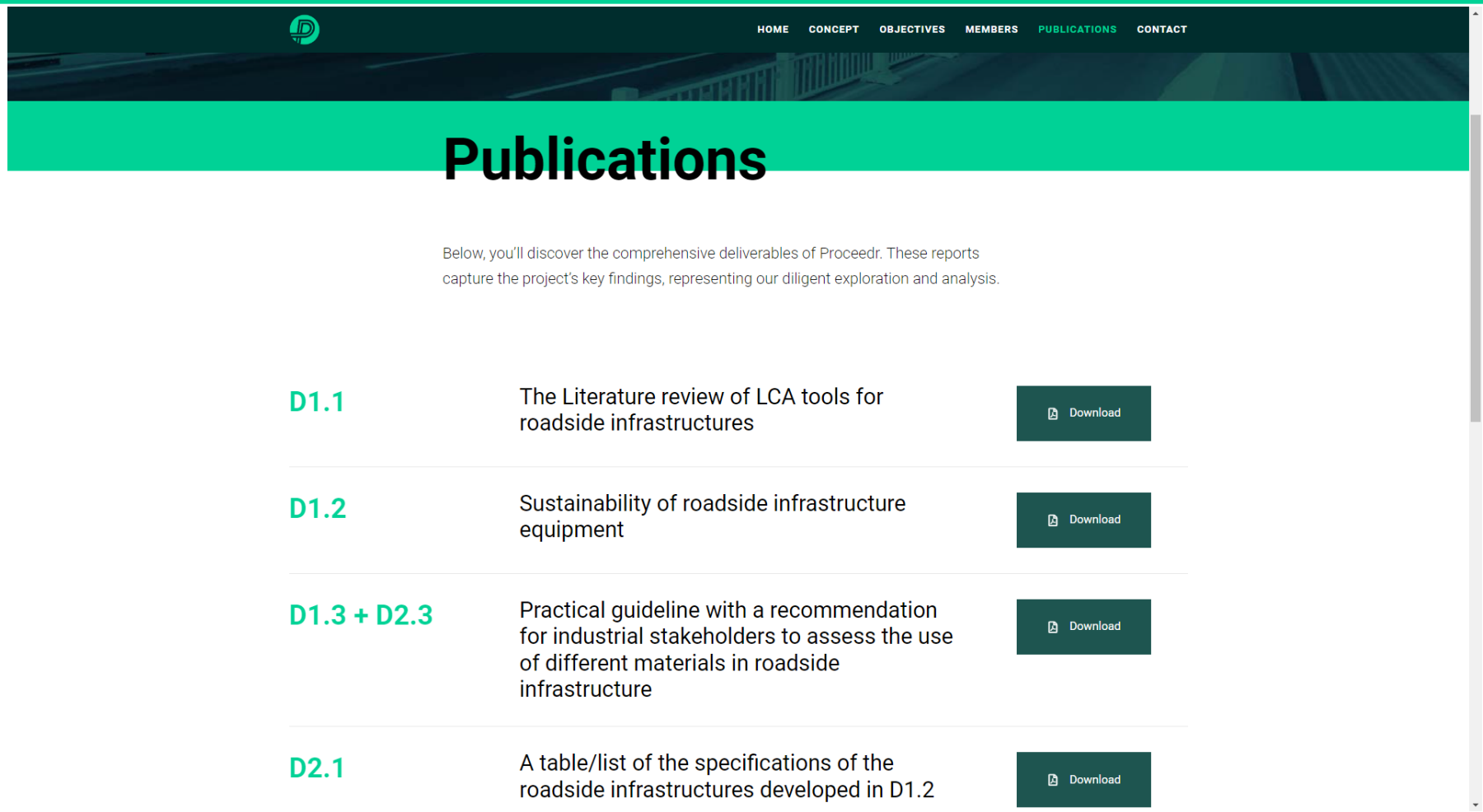
4.2.5 List of Deliverables

The complete list of deliverables is presented in the table below:

No	Deliverable / Report title	Due date
1.1	Report on existing LCA/LCCA-tools and roadside infrastructure solutions including a SWOT analysis of existing tools	03/2022
1.2	State-of-the-art report on roadside infrastructure equipment	05/2022
1.3	Practical guideline with recommendation for industrial stakeholders to assess the use of different materials in roadside infrastructure (Part A)	08/2022
2.1	A table/list of the specifications of the roadside infrastructures developed in D1.2	08/2022
2.2	A table/list of reasonable and representative assumptions of production, construction, maintenance, end-of-life as well as transportation processes of roadside infrastructure solutions	10/2022
2.3	Practical guideline with recommendations for assessing the use of different materials in roadside infrastructure (Part B)	10/2022
3.1	Prototype version of the LCA-/LCCA-online tool	04/2023
3.2	Prototype of the stand-alone tool on resource-efficiency and circularity	04/2023
4.1	Final report on the LCA-LCCA-online tool including a meaningful user manual	09/2023
4.2	Final report of the stand-alone tool on resource-efficiency and circularity including a meaningful user manual	09/2023
4.3	Final report providing practical recommendations for NRAs how to implement sustainability policy by using the developed tools	10/2023
5.1	Dissemination Plan: logo, flyer, poster and project website	01/2022
5.2	Midterm progress report	10/2022
5.3	Proposal of a hosting agreement including consideration according to the GDPR	10/2023
5.4	Final activity report	10/2023

The complete list of milestones is presented in the table below:

No	Milestones	Due date
1.1	Questionnaire and interviews with relevant stakeholders carried out	01/2022
1.2	Selection of relevant roadside infrastructure solutions and methodology or ranking criteria for product selection	07/2022
2.1	Consultation with NRAs and industry to obtain relevant detailed information on the use of different solutions and materials over the full life cycle of the roadside infrastructure solutions	07/2022
3.1	Definition of the software architecture	03/2022
3.2	Workshop for GUI-development with project partners and interested NRAs	05/2022
3.3	Coding of the LCA- and LCCA-Databases	10/2022
4.1	Workshop with the NRAs	05/2023
4.2	Finalisation of the online tool and the stand-alone tool	08/2023
5.1	Communication with the Program Executive Board	regularly
5.2	Exploitation plan for the project results	06/2023



https://proceedr.project.cedr.eu/publications/ or
https://www.cedr.eu/peb-call-2020-resource-efficiency-and-circular-economy

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Thank you very much for your attention on behalf of the PROCEEDR consortium.