CEREAL
CO_2 Emission Reduction in roAd Lifecycles

20 November 2012

PEB meeting Delft

road ERA net

SEVENTH FRAMEWORK PROGRAMME

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  1. Survey & interviews
  2. Tool assessment
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Project consortium

Three parties with a long history in research, development and consultancy on roads and road building materials:

Royal HaskoningDHV (NL) – Project coordinator, experience in development of predictive tools (LCA and CO2 foot printing)

KOAC-NPC (NL) – Knowledge partner on pavement behaviour and performance over life time and maintenance and rehabilitation strategies.

DRD (DK) – Specialist in research, development and testing to provide reliable data on road related issues. DRD developed the LCA model for materials ROAD-RES.

Website www.cereal.dk

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Objectives

1. A **decision tool** for NRA's and contractors which is **harmonized** on the European level

2. Development of a prototype software tool for computation of the CO2 emission of pavement **construction and maintenance** works.

3. Proper use of the tool by providing **training courses** and tutorial material.

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Achievements so far (1)

International **online survey & interviews** with NRA's of the funding countries to:

- Identify the general level of experience
- Inventory of existing tools.
- Identify the potential user group & the desired results
- Verification of the scope of the tool.
- Identify the functional requirements

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Achievements so far (2)

Results of the **survey and interviews** :

- Many tools but very limited use.
- Current tools are too complex, not user friendly, not transparent and have too high requirements for input data.
- Data quality & availability
- Scope
- Use in the design phase of the decision making process.
- Most of the tools are not embedded (yet) in national policies.
- International expert panel has been formed (20 experts).

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Achievements so far (3)

Assessment of existing tools:

- Identify structure, calculation rules and data that can be used for CEREAL
- Long list of about 50 tools (also US)
- First selection of tools: energy/CO_2 and infrastructure
- Shortlist 16 tools
- Assessment protocol:
    1. Background information (name, purpose, language)
    2. Technical questions (software, data accessibility etc.)
    3. User related questions (a.o. target group)

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Achievements so far (3)

Conclusions on the tool assessment:

- Different purpose
- Closed and not transparent
- Require a lot of data and/or are complex in structure
- Focus on new construction
- American (US)models are more user-friendly
- European models provide useful components and material data.

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Achievements so far (4)

Functional requirements for the new tool:

- Data requirements are low
- Open structure
- Best available engineering knowledge & data
- Reliable results
- Predefined maintenance scenario's
- Full life cycle of roads, but focus on maintenance
- includes the main road objects
- uses existing databases
- For projects in North-Western Europe,
- Does not include calculations on use phase

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Achievements so far (5)

Tool development:

- Started in July based on the preliminary functional requirements.
- Building of the structure.
- Development of the content (Data collection & recalculation)
- Development of a testing protocol & procedure.
- Bèta version ready November/December 2012

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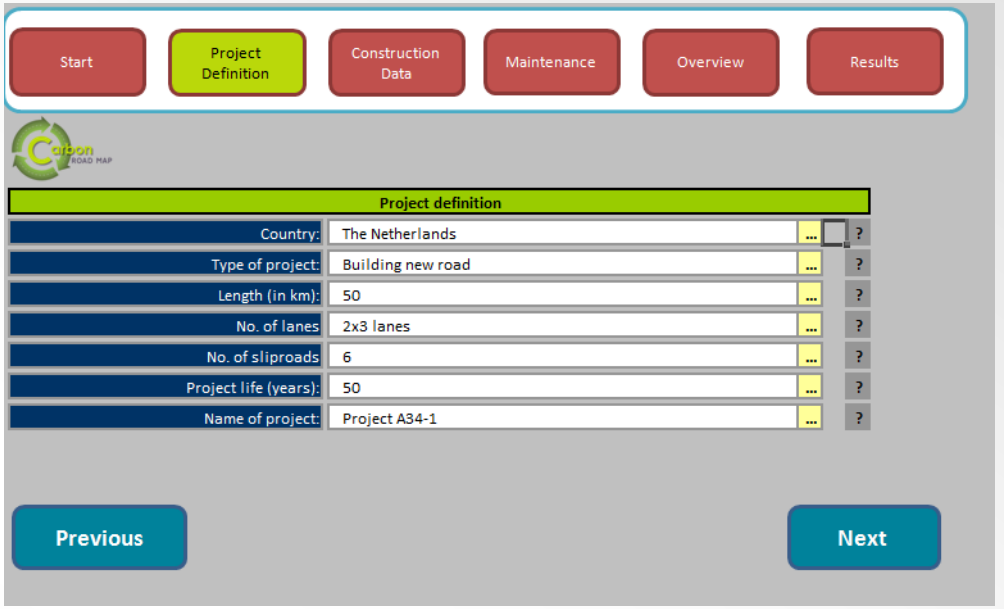
Carbon Road Map

Carbon Road Map

'Carbon Calculator for road projects'



- ✓ **Easy to use** in default mode
- ✓ Adjustment of most defaults in the **expert mode**
- ✓ Sophisticated **engineering** calculations
- ✓ Makes **use of existing tools** and databases

Screenshot of project definition (beta version)

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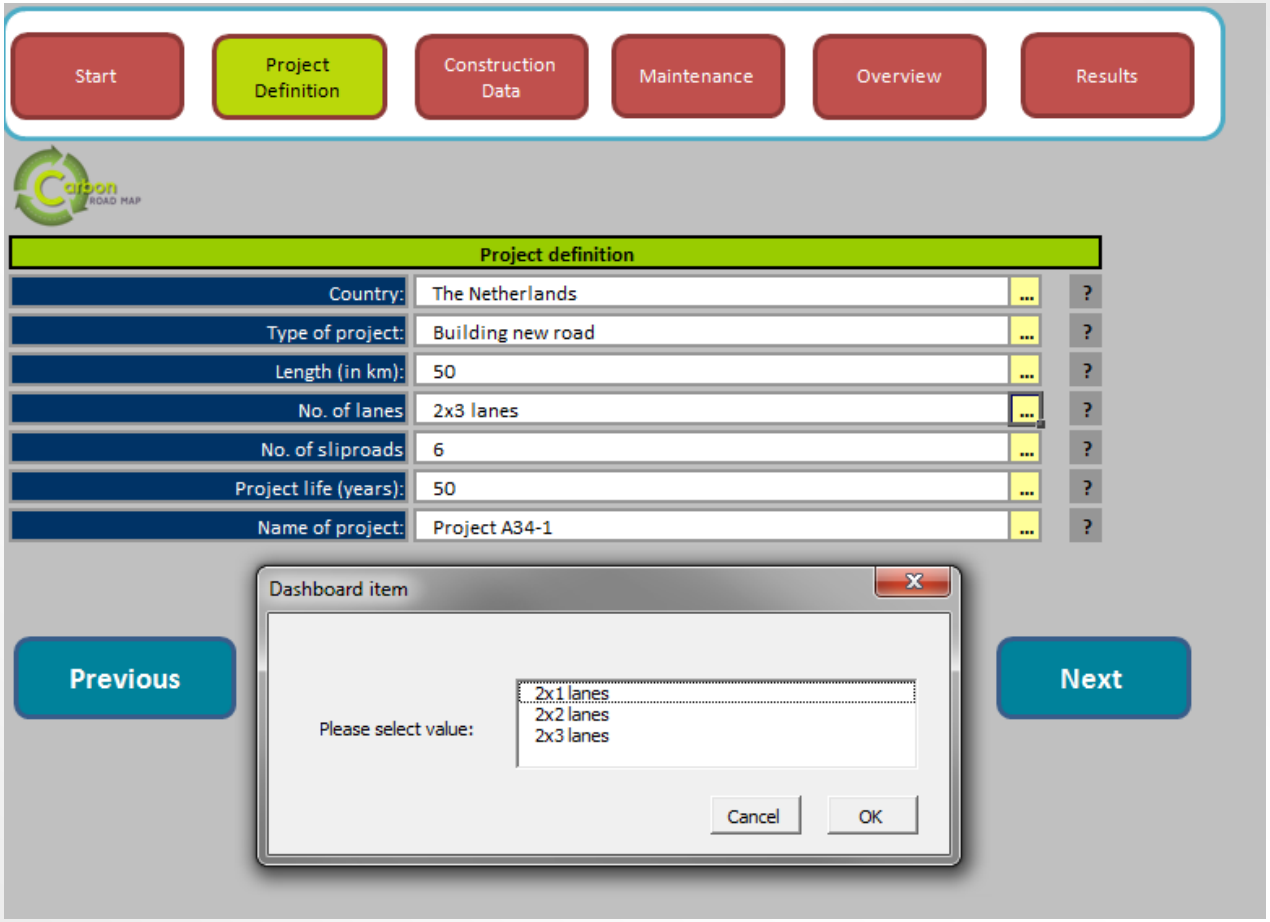
Carbon Road Map



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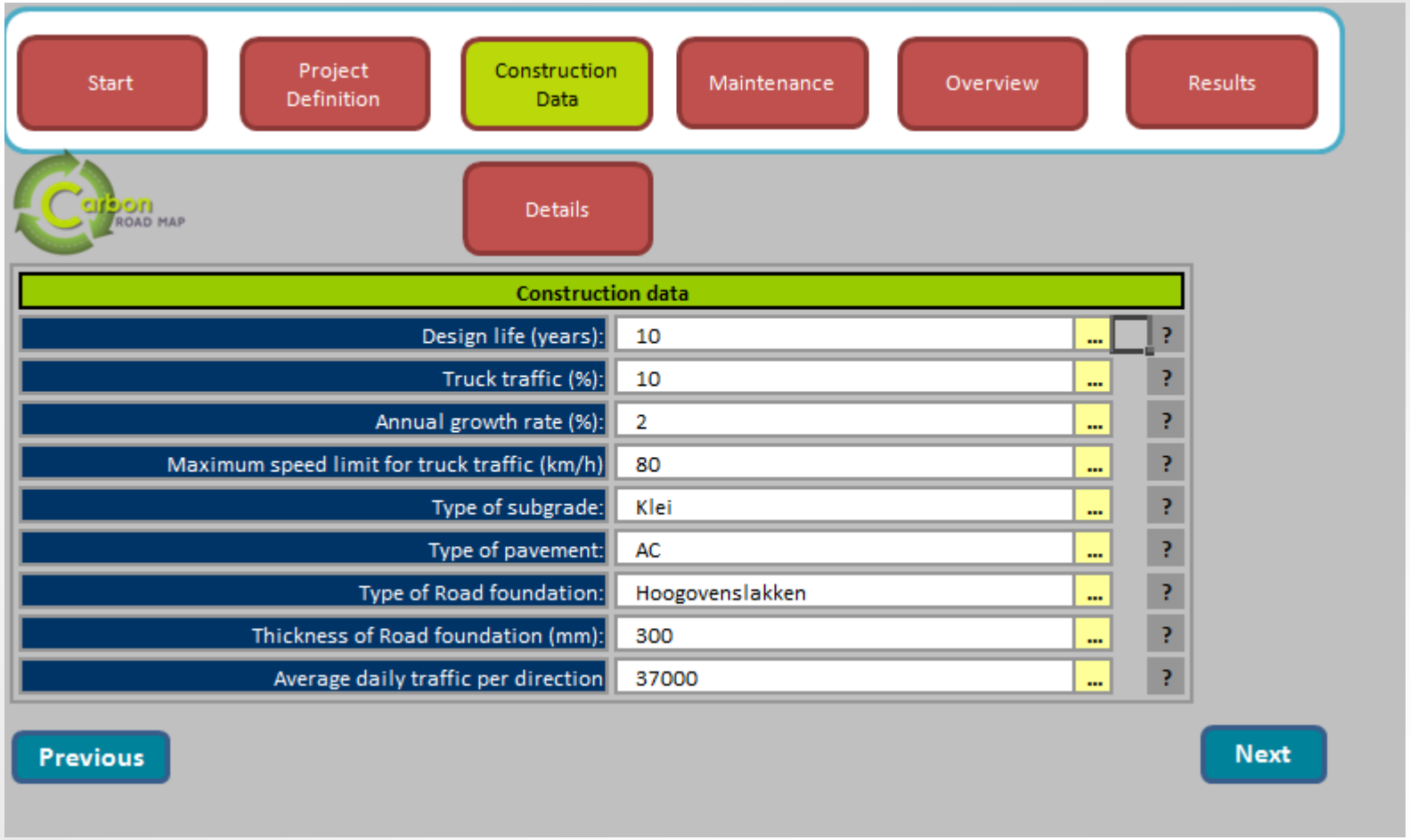
Carbon Road Map



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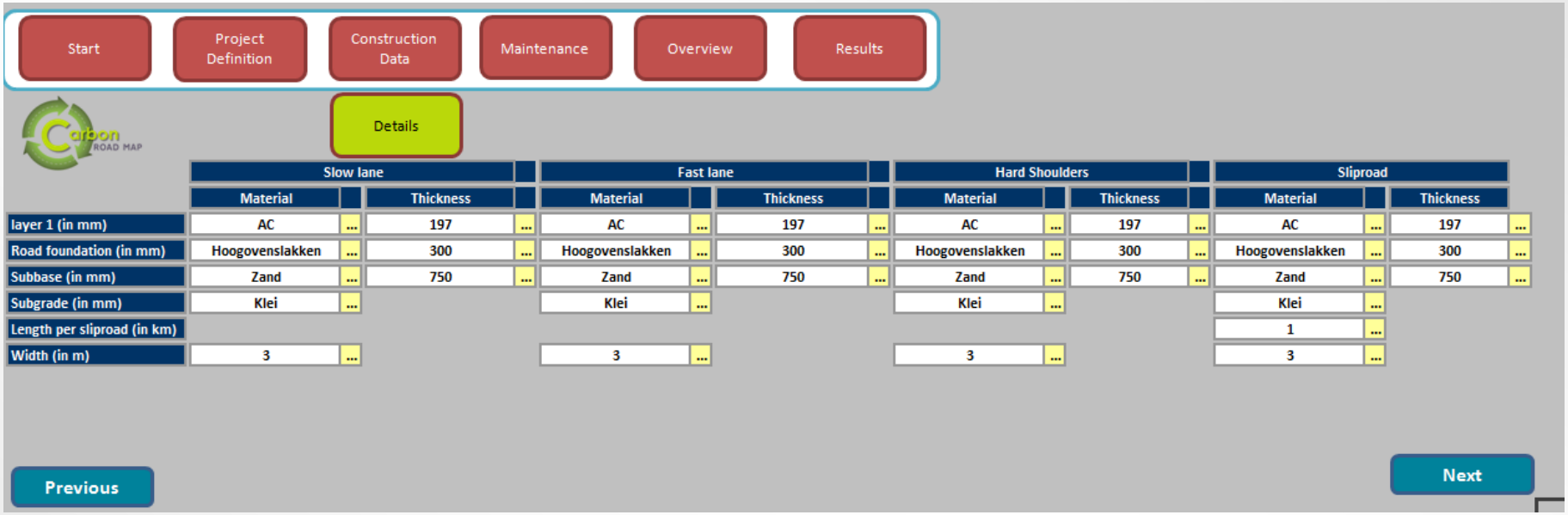
Carbon Road Map

Screenshot of construction details (beta version)



✓ Simple to use but with **detail in expert mode**

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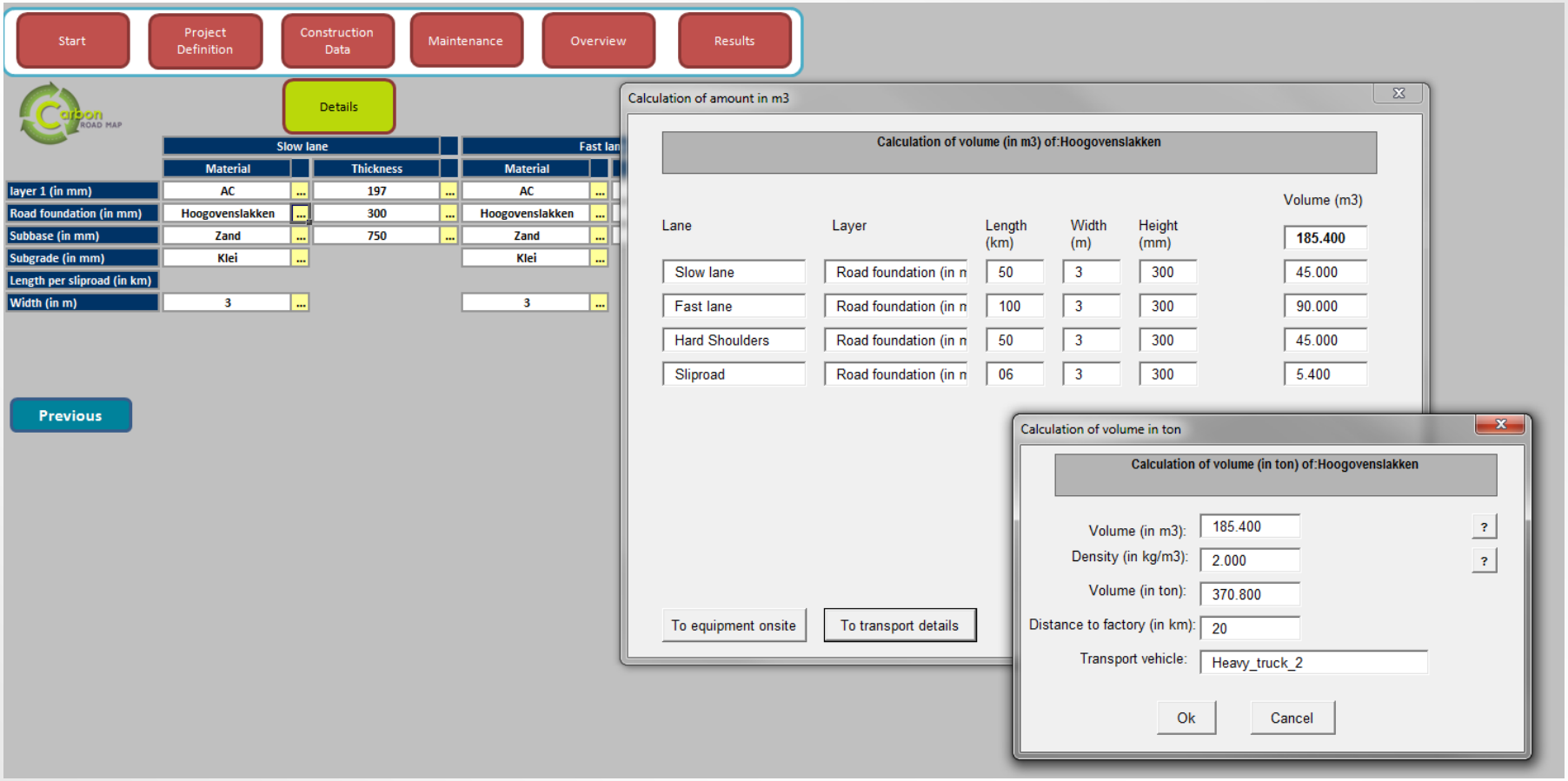
Carbon Road Map



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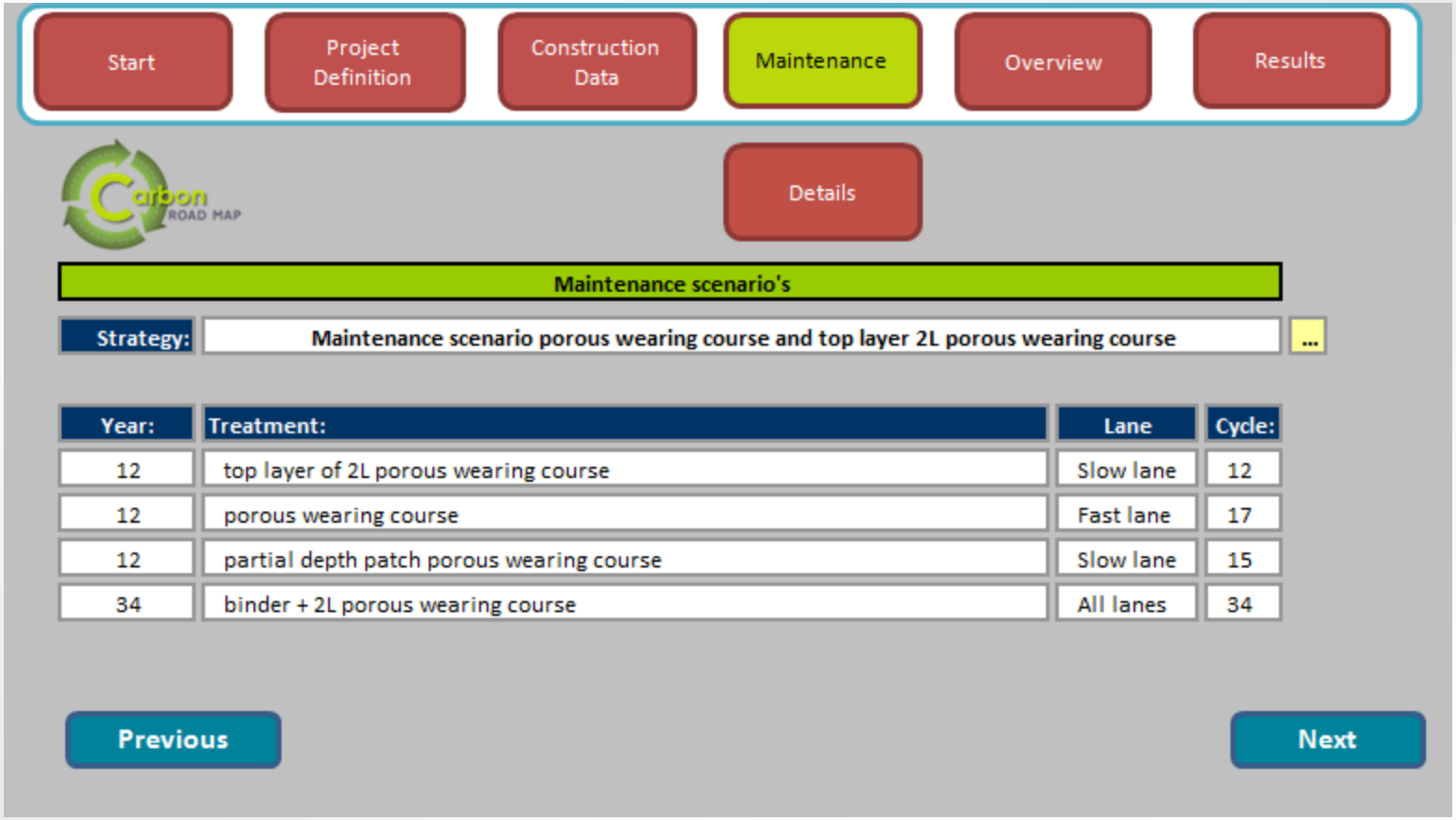
Carbon Road Map

Screenshot of maintenance (beta version)



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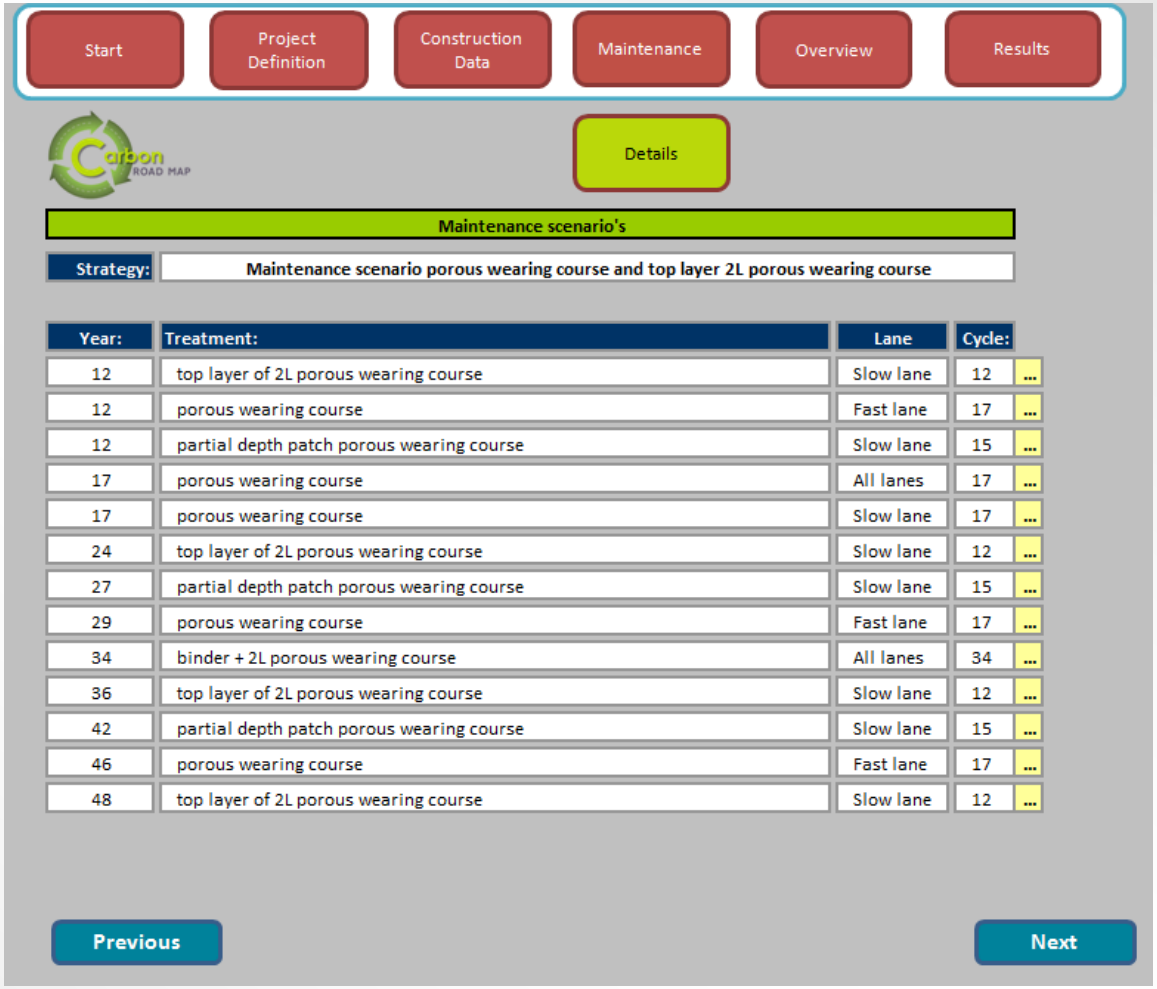
Carbon Road Map

Screenshot of maintenance details (beta version)



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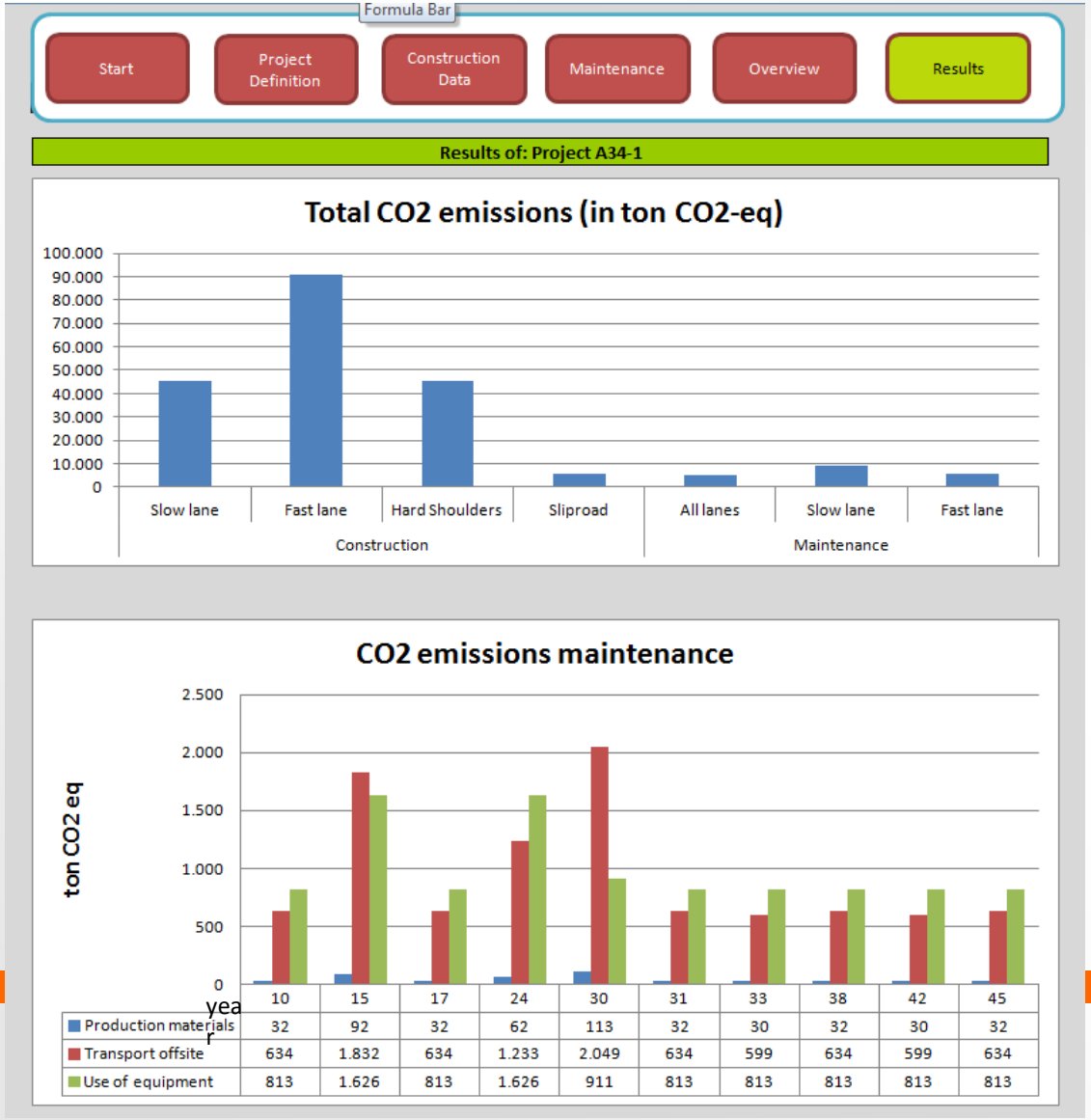

Screenshot of results

(beta version)

roadERAnet

SEVENTH FRAMEWORK PROGRAMME

To-do list

1. Finishing bèta version structure and databases.
2. Inclusion of end-of-life and road objects.
3. Testing of the bèta version (expert panel).
4. Preparation of the final version.
5. Development of user guide and courses for users.
6. Communication/presentation of the tool.

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