

13th UIC Sustainability Conference



Smart solutions for a
sustainable railway

How to achieve a sustainable project

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Agenda



- Overview ProRail
- Sustainability Ambitions ProRail
- Examples 1 & 2: sustainable solutions for stations
- Examples 3 & 4: sustainable solutions for infrastructure
- Dilemmas and discussion



Overview ProRail



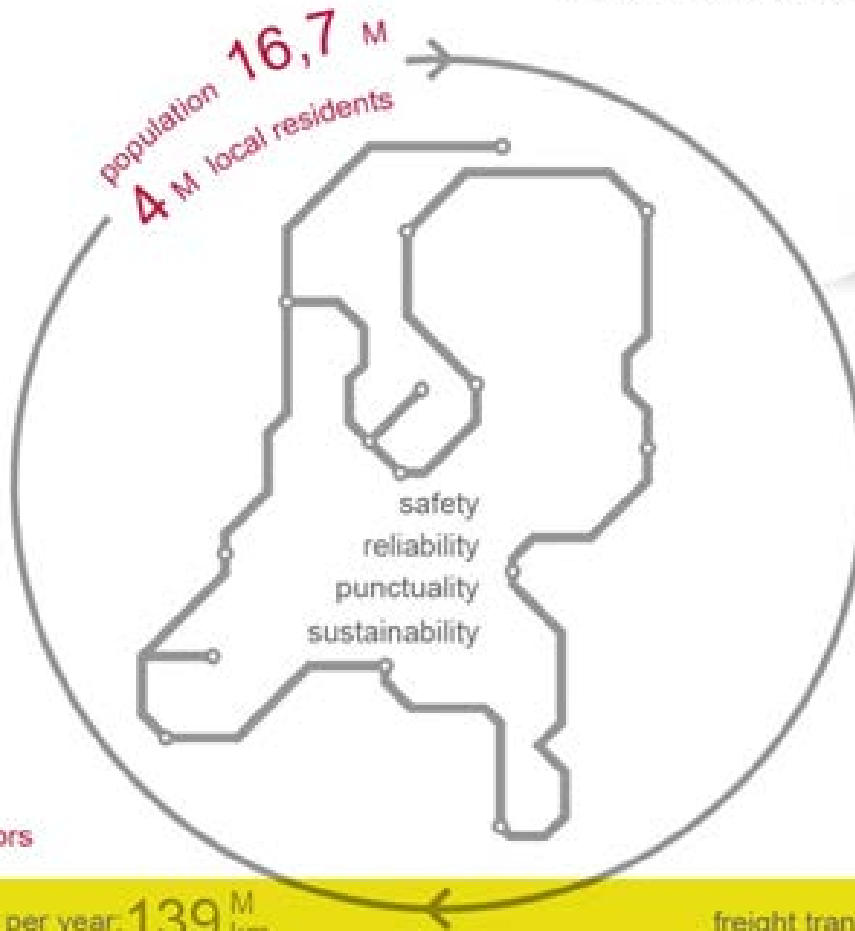
24/7

24 hours per day / 7 days a week / 365 days a year



1,083,000
passengers per day

population **16,7 M**
4 M local residents



3,300,000
trains per year



115,000
tonnes of freight per day

9 passenger operators

19 freight carriers

passenger transport per year: **139 M km.**

freight transport per year: **10 M km.**

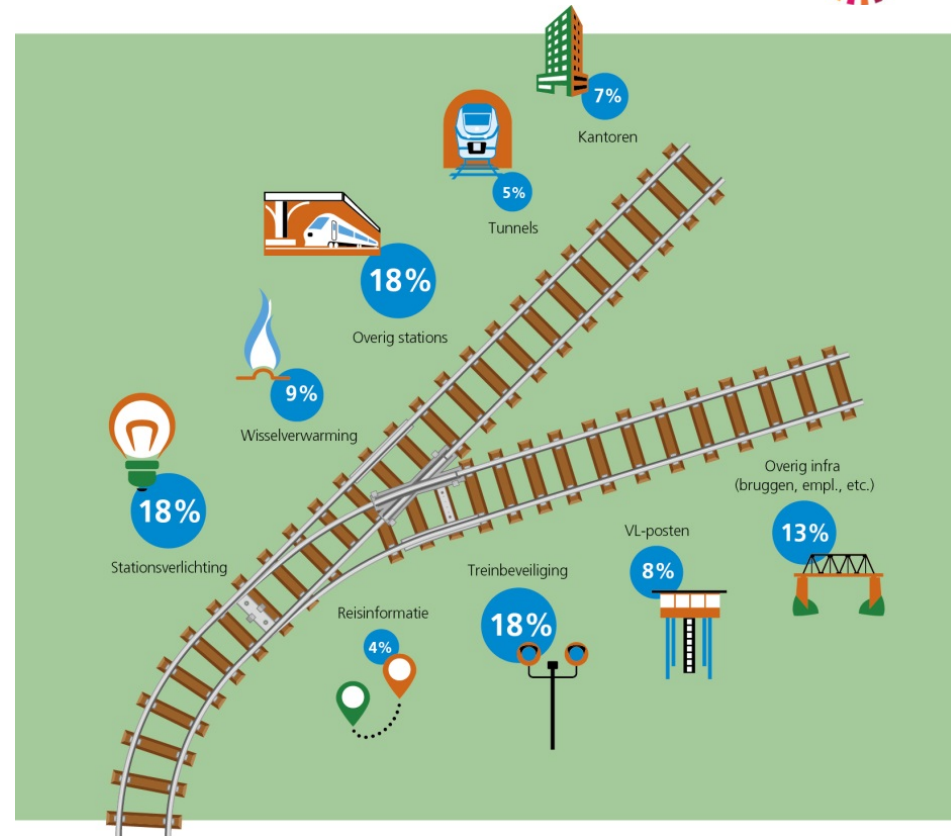


Our ambitions on sustainability



The Dutch Rail sector has pledged to be carbon neutral in 2050 (scope 1, 2 and 3). For ProRail this means:

- In 2030 we are 30% more efficient in the use of energy compared to 2015.
- In 2030 all our electricity used is renewable, generated on our own assets.
- We use only circular materials and reuse as much as possible.



How to achieve these ambitions



We work together with our stakeholders (train operators, government, contractors, etc.)

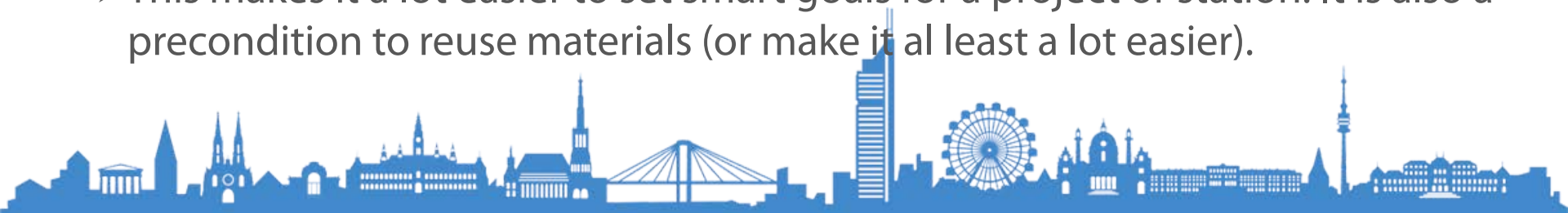
➤ We have several instruments to accommodate this.

We challenge companies to innovate, and reward these innovations.

➤ Make innovations possible in projects, know how to test innovations.

Know the state of your assets.

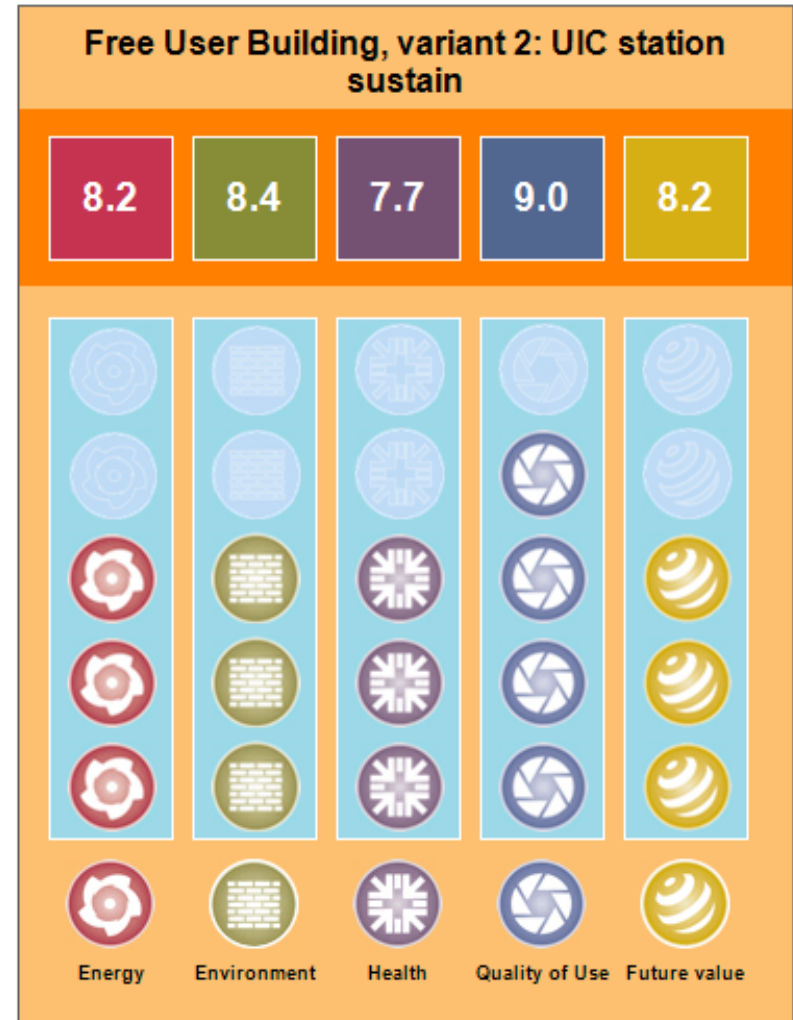
➤ This makes it a lot easier to set smart goals for a project or station. It is also a precondition to reuse materials (or make it at least a lot easier).



Example 1: improving stations



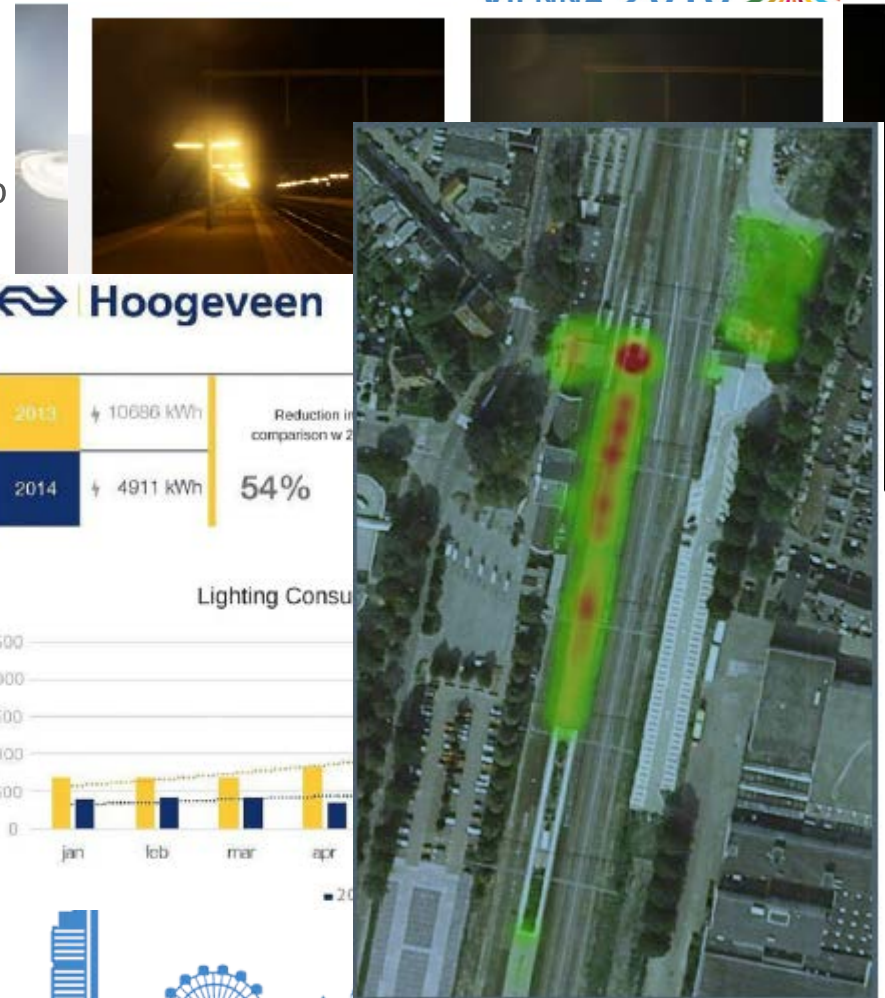
- Assessment tool Sustainable stations. Developed in cooperation with NS, Translink, DB, Lancashire County, City Boulogne sur Mer, Network Rail and hosted by W/E.(funded by EU).
- Software to measure the sustainability of a station or a station design.
<http://www.sustainablestation.eu>
- Five theme's: on each theme the station is rated on a scale from 1 (very poor) to 10 (very good).
- Helps to identify the weaknesses and strengths of the station or its design and makes it possible to work on improvement measures objectively and improve the quality of the station.



Example 2: better light



- Smart lighting:
LED, combined with sensor technology.
- Advantages: less light pollution, up to 75% more energy-efficient, less maintenance cost.
Reuse of old lamppost possible (retrofit).
- Second advantage:
information about the occupation and movements of the passengers on the platform.
- Wireless communication → opportunities to optimize the maintenance and make it more responsive.



Example 3: infrastructure



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We use a LCA-tool to calculate the environmental impact: Dubocalc. This tool favors materials with less impact on the environment and reuse of materials.

Other measures ProRail can take to accommodate energy efficiency of trainoperators:

- Abrogation of speed limitations. We have two software tools to calculate the energy effect on the timetables.
- Impact of Routelint and other driver advisory systems. See: https://www.youtube.com/watch?v=xmhl6Jyh0_U
- Possible transition from 1,5 to 3 kV; 20% gain of energy efficiency and more infra capacity.



Example 4: better light for marshalling yards



- Objectives are better visibility for the maintenance crews and train drivers, lower life cycle costs and lower energy consumption.
- Measures are:
LED-light, not on traditional poles, but along wires to avoid shadows from trains.
Smart techniques to switch on and of the lighting or dim the light.
- Tauw Consulting is developing for ProRail a VR-tool, to show and feel the impact of different solutions, rather than on calculations only.



VR to simulate and demonstrate



Dilemma's & discussion



- How to integrate solar panels in our standard systems? Such as rooftops of substations, standard solutions at stations and noise barriers.
- The rail sector is very conservative. How to speed up the transition?
- Most systems have a long lifespan; thus changes are slowly implemented, but materials have a longer lifespan.
How to cope with this?
- Technological developments are going rapidly, but our projects last several years. How do we make these flexible enough, in order to cease the opportunities that may come along later on in a project?

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