Nordic Sustainable Infrastructure Webinar

Current state of sustainability in infrastructure in Finland

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Chair of FIGBC Infrastructure Committee
Head of Sustainability, Ramboll Finland

Green Building Council Finland - Infrastructure committee

70 committee members

4 meetings per year

Purpose

- To accelerate the **implementation of sustainability** perspectives in the infrastructure sector.
- To ensure that the construction of new infrastructure **reduces climate emissions, replaces non-renewable natural resources with circular economy solutions and develops a diverse and unified green network.**

Goal

- All significant infrastructure projects in Finland will take into account the goals of sustainable development
- In order to mitigate climate change, the goal is to **reduce greenhouse gas emissions from infrastructure construction by -40% by 2030.**

Tasks and procedures

- Supporting the development of **circular economy criteria** for infrastructure procurement and the national carbon footprint calculation method.
- Implementation of the measures of the carbon-neutral built environment action program and promoting the utilization of the definition of sustainable infrastructure
- Identifying and disseminating other guidelines and good operating models
- Facilitating the use of **the BREEAM Infrastructure** environmental classification method in Finland.

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Nine criteria for sustainable infrastructure

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The definition of sustainable infrastructure* consists of nine main criteria and their sub-criteria.
The criteria cover ecological, social and economic sustainability of infrastructure.
The emphasis between the criteria may vary depending on the infrastructure project and the stage of the life cycle under consideration.

Ecological sustainability of infrastructure

1. Mitigation of climate change and adaptation

- Reducing emissions during the entire life cycle of infrastructure
- Infrastructure favoring walking, cycling and public transport
- Renewable (emission-free) energy production
- Resilience against the effects of climate change

2. Resource wisdom and circular economy

- Utilization of existing infrastructure, adaptability
- Reducing natural resource consumption and improving material efficiency
- Material choices
- Reuse and recycling of materials

3. Biodiversity and reduction of environmental harm

- Appropriate conservation of natural areas and securing living conditions of species (e.g. ecological networks)
- Securing and increasing ecosystem services
- Reducing negative effects on soil and water system and reducing chemicalization of nature
- Reducing noise, dust, light and vibration harm and reducing harmful emissions on breathing air

Social sustainability of infrastructure

4. Consideration of users' needs

- The possibility to participate in infrastructure planning, impact assessment and decision-making regarding different parties
- Considering the needs and cultures of different groups of people
- Equal treatment / equality

5. Implementation of environmental quality factors

- Accessibility
- Security
- Healthiness
- Comfort
- Aesthetics

6. Effects on people

- Direct and immediate effects (positive and negative ones)
- Indirect and indirect effects, chains of effects (e.g. supply chains of raw materials and materials and conditions on production sites)
- Long-term effects (including effects on future generations)

Economic sustainability of infrastructure

7. Technical functionality

- Infrastructures service life (planned vs. realized)
- Maintainability, repairability and conversion flexibility
- Security of service, security of delivery
- Risk management

8. Life cycle impacts

- Overall economics of investments
- Maintainability, repairability and the effects of conversion flexibility on maintenance costs and property management

9. Effects on development of the transport system and the urban structure

- Effects on the transport system as a whole
- Effects on the development of the urban structure (new potentials and limiting conditions)

(FiGBC Infrastructure committee 2021)

The first BREEAM Classification in Finland: Vt12 The project part of Lahti's southern ring road

- Vt12 The project part of Lahti's southern ring road has been awarded the BREEAM Infrastructure environmental classification, the first in Finland.
- The project was implemented as an alliance contractor Valtari
- The project received the second highest, i.e. commendable, rating in 2023.
- With the certification, environmental responsibility rose more clearly to the project's priorities and encouraged personnel to bring forward ideas more boldly.

Picture: Skanska. The Patomäki tunnel under construction.
The tunnel was decided to be shortened during the development phase, which reduced the project's emissions and the amount of technology used.

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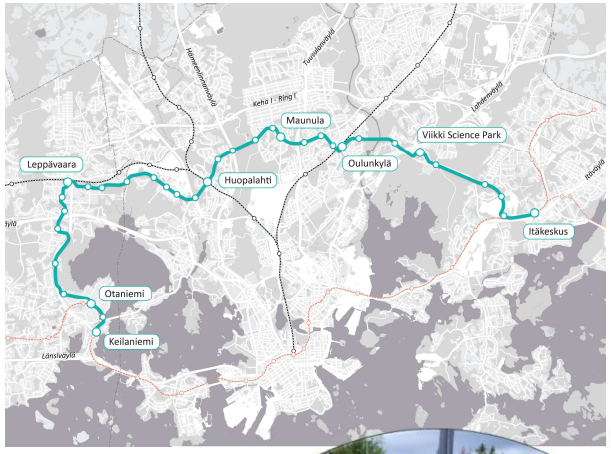


Jokeri Light Rail

- 25 km of new light rail line, with the aim of implementing an attractive public transport, reducing car use and greenhouse gas emissions and air pollution.
- An urban development project in which, in addition to a new urban rail connection, a pleasant urban environment and cycling path is created.
- An environmental team was formed for the project. **Environmental management: *environmental handbook*** collected all the issues to be considered in one cover, environmental orientation for constructors, the process of identifying environmental risks throughout the project, environmental walks, communication, etc..
- **What in practice?** For example: large trees were moved instead of felled from the path of the track, the ecological state of urban streams were improved, meadows were established by the tracks for butterflies and buzzers, invasive alien species were eradicated, animal movement (an underpass for small animals, smelling stones for otter) and breeding (bird nests, insect hotels, flying squirrel nests) were secured.

Niina Salojärvi, Helsinki Metropolitan Transport Ltd

Environmental management documents - City of Helsinki

Environmental requirements have increased in the past years and the trend is evident to continue. Legislation, ambitious emission reductions, circular economy solutions and biodiversity loss, but also the changed circumstances by climate change affect the way we are planning and managing environmental issues.

Target is to improve

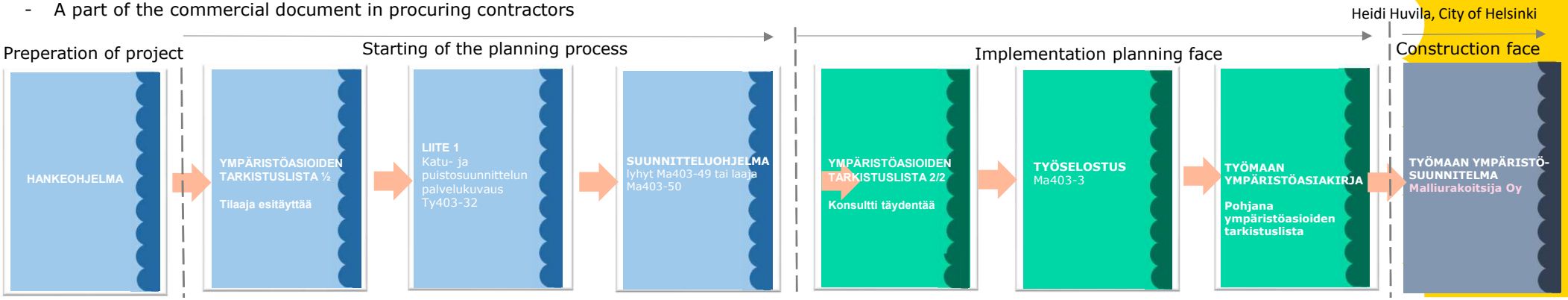
- Managing of the environmental issues early on in the infrastructure planning process,
- The awareness of solutions on how to cause minimum environmental impacts in planning,
- The constructors ability to perform while minimizing environmental impact
- Guidance on how to reduce the emissions in planning

Checklist for environmental points in planning

- Project lead fill the essential points and targets in environmental issues in preparation of the project
- Planner completes the lists as planning proceeds
- Checklist includes sections such as Enhancing diversity of nature, Handling harmful alien species, Managing recycled materials such soil or concrete, Environmentally wise pre-construction methods, Handling the construction site waters, Building near water, Preserved and demolished structures and Actions to be considered in the construction face

Environmental plan for construction sites

- Target is to guide contractor to plan all the essential work methods so that environmental impact is decreased
- Prefilled already in planning face based on checklist
- A part of the commercial document in procuring contractors



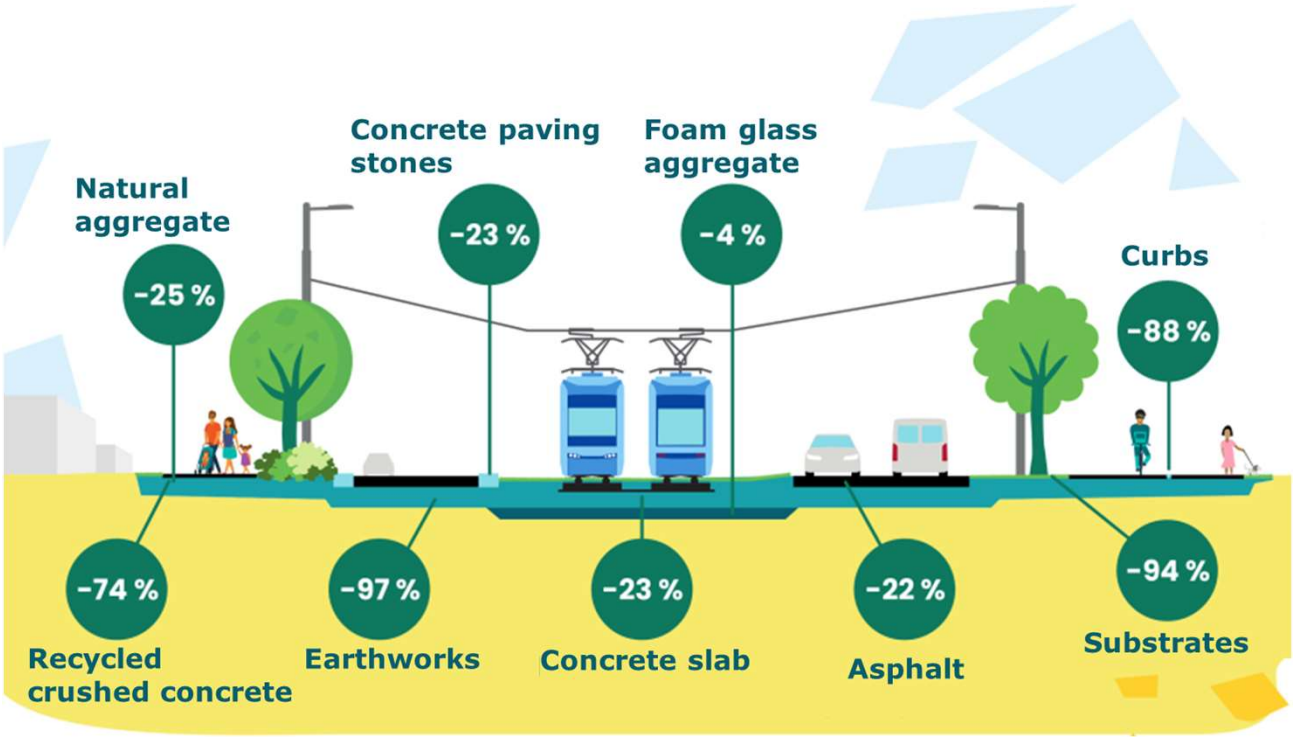
Emissions database for infrastructure construction in Finland

- The aim is to harmonise the calculation of the climate impacts of infrastructure construction and to enable comparison with harmonised data.
- **The CO2data.fi** service provides information on the average emissions of materials, products, transports and construction site operations used in Finland.
- The service Maintenance and development is the responsibility of the Finnish Environment Institute SYKE on behalf of the Finnish Transport Infrastructure Agency.
- It is open to everyone and free of charge.

Operators in the infrastructure sector now have a better opportunity than before to identify and reduce emissions.

This also makes it easier for the owners of infrastructure projects to demand low-carbon solutions in the projects.

Examples of decarbonization in the Vantaa light rail construction



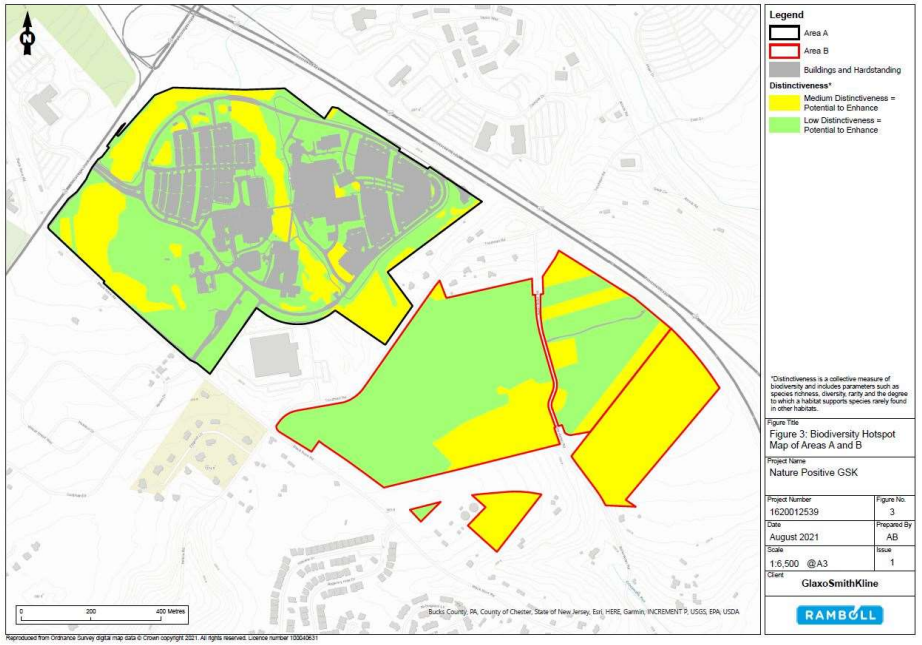
Picture modified and translated from the Vantaa light rail website. Examples are calculated from the "Tietotie" design section and results compared to conventional solutions. Results show potential to lower embodied carbon

- Enables the client to compare multiple different solutions from climate and cost optimization perspective.
- Concrete options make validating material selections or process decisions easier.
- Understandable and explained figures make reporting to different stakeholder groups easier.

Promoting biodiversity has been risen on the agenda

- Biodiversity should be measured in the projects as well as CO_2 emissions.
  - Quantitative measurement methods are becoming more common and they are also needed to calculate the ecological compensation.

- Voluntary ecological compensation is new in the Finnish law, The new Nature Conservation Act
- With the help of ecological compensation, the damage caused by human activity to biodiversity on the one hand is compensated by increasing biodiversity on the other.
- For example, the loss of a grove as a result of construction activities can be compensated by improving the condition of a weakened grove elsewhere. In this way, nature values are not reduced on an overall level.

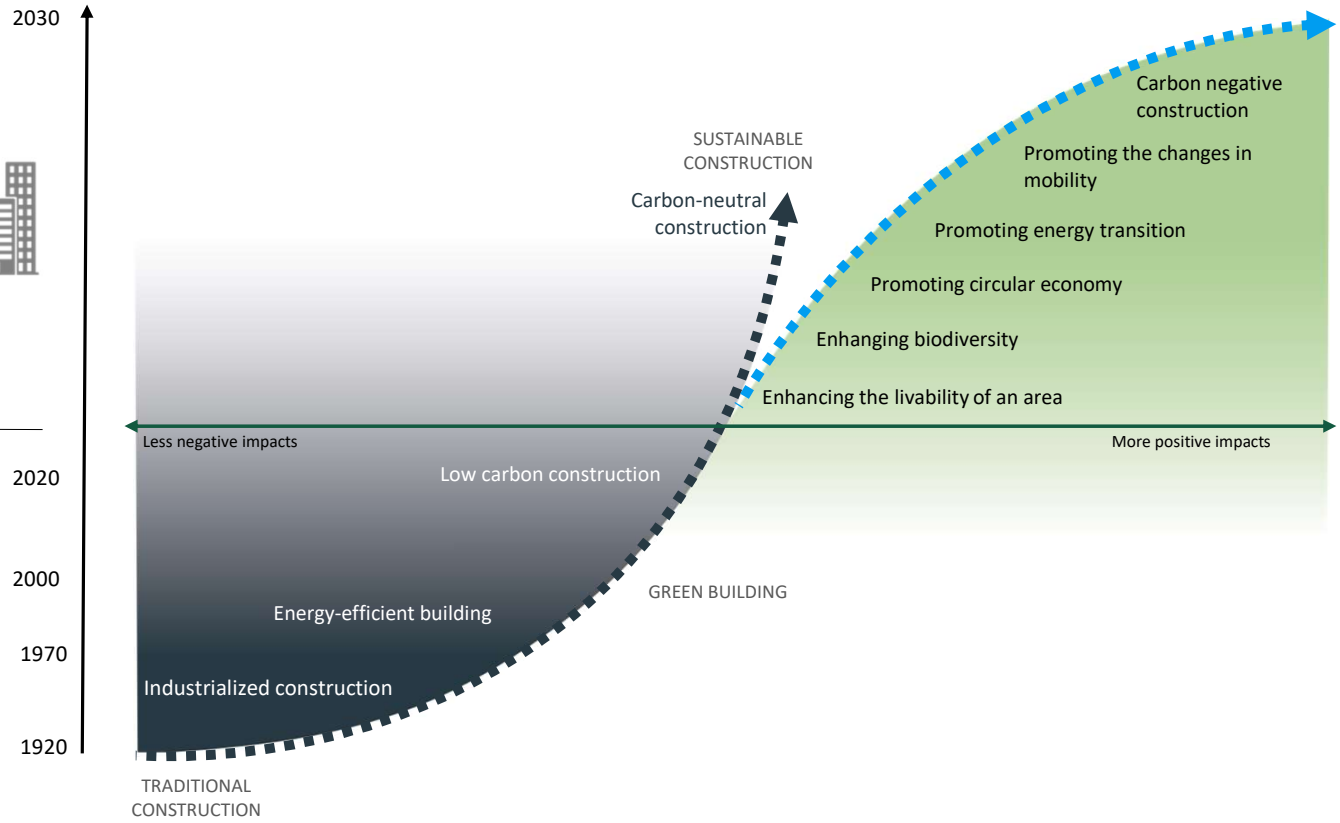


Biodiversity Metric 3.0 tool for visualizing areas with poorer or more valuable biodiversity on the map

Now is the time to take the big leap and rethink the way we design and maintain infrastructure

BEFORE

Energy-efficient and green building focused on minimizing the negative climate impacts of construction industry.



CLIMATE WISE CONSTRUCTION

NOW

Regenerative, climate-wise construction does not aim only for sustainable balance but positive impacts and holistic wellbeing for the nature and the people.

Bright
ideas.
Sustainable
change.

RAMBØLL