

Development Center for Carbon Neutral Construction

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Development Center for Carbon Neutral Construction Industry

- Lahti – European Green Capital 2021 has launched a development center for carbon neutral construction
- The project strives to bring together the industrial and academic entities regarding the subject of sustainable construction
- The battle against climate change enables the creation of new innovations and their commercialization



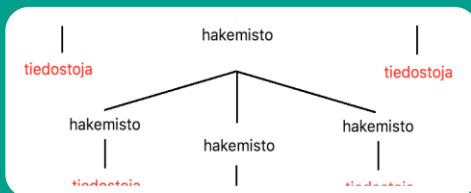
Development Center for Carbon Neutral Construction Industry

Database for Carbon Neutral Building

Gathers information of carbon-neutral building and constructions

Maintains and updates the latest information

Produces guidelines related to carbon neutral construction



The link between research and industry

Enables research and development projects in Lahti Pilot buildings, coordinates projects

Produces know-how for the industry, enables products to enter the market

Opens markets for exporting products



Generating Information

Produces information of carbon-neutral construction with partners

Actively starts new research and development projects

Organizes funding and coordination for research projects

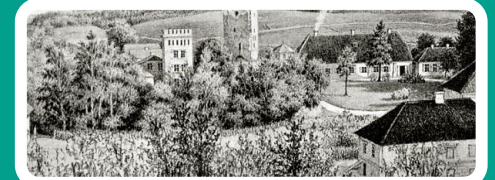


Communication and education

Shares information and provides advice of carbon neutral constructions

Assists the relevant educational institutions in organizing the training

Guides house owners, designers, builders



What's the idea?

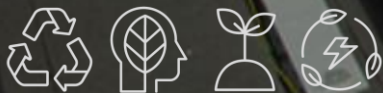
- The main task of the development center is to enable implementations of pilot buildings and research projects for low-carbon and energy-efficient constructions and technics
- The use of building and zoning projects of the city of Lahti as a research and development platform provides a basis for new innovations
- The research and development partners would be LUT University of Lappeenranta and Lahti, LAB Polytechnical School of Applied Sciences, Ladec Develop Center and University of Helsinki
- The operation is initiated by the City of Lahti.



An aerial photograph of a city with several multi-story apartment buildings. In the foreground, a rooftop is covered with large blue solar panels. A person in a blue and yellow safety vest is visible on the roof, working with the panels. The background shows more buildings and green hills.

Tools for Carbon Neutral Construction

- Energy efficiency, development of zero-energy buildings (or even energy-producing buildings)
- Optimization of the use of CO₂-emitting building materials (concrete - steel - plastic) and their replacement
- Storage of coal and / or carbon dioxide in buildings
- Extending the lifecycle of buildings
- Increasing the occupancy rate of buildings
- Effective use of building demolition materials
- Zoning to enable the change



Development of Energy Production

Before



Coal,
oil

Now



Wood chips,
recycled waste

Future



Sun, wind, geothermal
energy, hydrogen ...



Development of Building Materials

Before



Concrete, steel

Now



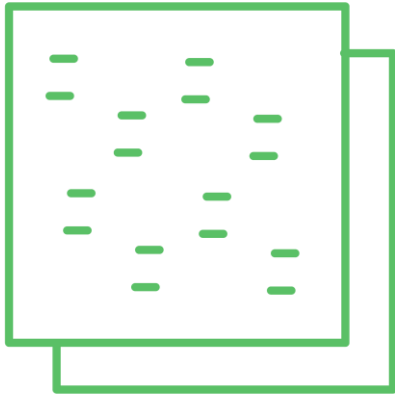
Wood

Future

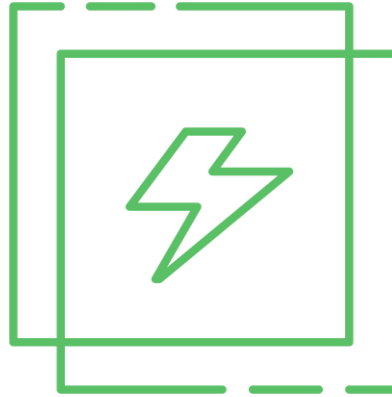


Recycled building
materials

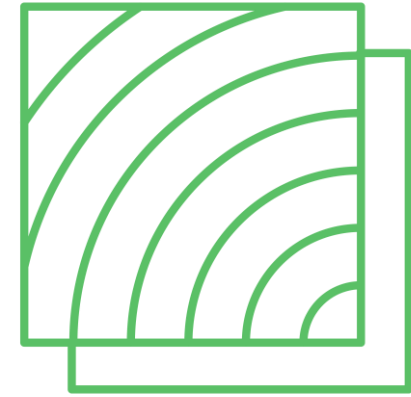
The Main Developing Areas



From demolition
material to recycled
product, innovation
ecosystem

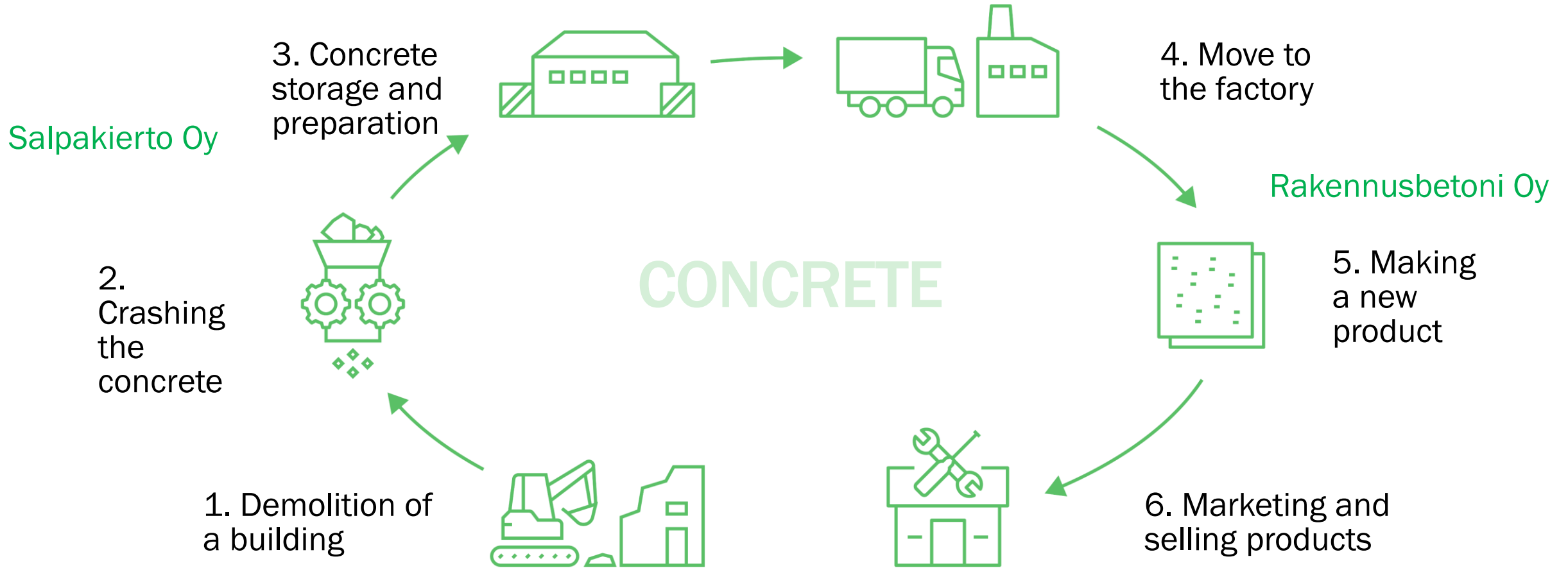


Lahti Smart
Energy –
Cluster



Arial wood valley
ecosystem and product
chain

Utilization of building demolition waste



Why?

- World will move to carbon-neutral construction in any case, - Lahti has the opportunity to be one of the pioneers
- Companies in the Lahti area receive development platforms (Pilot houses etc.) where products can be tested both for Finnish and export markets
- The skills of the participating universities and polytechnics as well as local industry increase



In progress:

- Development of a Wooden Apartment Building - Customers Guide (Lahden Talot Oy, LAB, financing Min. Env.)

Planning:

- Myllypohja Wooden School and Multi-purpose Building, (business dialogue held, planning in progress)
- Kisapuisto - Carbon Neutral Football Stadium, Spatium Tilapalvelut Oy, planning in progress)
- 0 -Energy Block with Wooden Data Center, Spa, Swimming Hall, Hotel, Kinon Oy, (Ranta-Kartano)
- Carbon-binding Hybrid Apartment Building, Renovation Project (old concrete-solid wood combination) –Lahden Talot Oy, LAB
- Development Work of Carbon-binding hybrid house fittings, Peikko Group
- Creating a Wood Expertise Product Chain in Päijät-Häme, LAB, LUT

Research – and Development projects

WOOD



In progress:

- Climate-wise housing company, Communications project, Real Estate Association Päijät-Häme, financing Min. Env.

Waiting for funding decision:

- Change of oil-heated terraced house to renewable energy, Lahden Talot, VTT, LUT, Lahti Smart Energy Cluster
- Ranta-Kartano's 0-energy block, Kinos Oy, Lahti Smart Energy Cluster, intent planning in progress, financing discussed with the Ministry of Employment and Economy

Planning:

- Use of polluted groundwater in cooling and heating, trackside area, Lahti Energia, Lahti Aqua, Lahti Houses, Lahti Smart Energy Cluster, planning in progress, financing discussed with the Ministry of Employment

**Research – and
Development
projects**

ENERGY



Waiting for funding decision:

- The Use of Demolished Crushed Concrete in New Building Material Production, ECOSYSTEM, Rakennusbetoni Oy, Salpamaa Oy, City of Lahti, LUT, LAB

Planning:

- The Use of Brick Waste and Used Mineral Wool Together with Geopolymers to 3D-printing of Products, ECOSYSTEM

**Research – and
Development
projects**

RECYCLE



In Progress:

Market Study of Carbon Neutral Construction in Europe,
Catapult Oy, Lahti Science Park

Niemi University Campus - Carbon Neutrality Development
Competition of an Old Building, Lahti Science Park

Carbon-neutral District Zoning Competition (Niemi area),
Autumn 2021

Zoning of the Carbon-neutral Detached House Area,
Karistonrinne, planning started

**Research – and
Development
projects**

OTHERS

