Sustainable and green city in practice: green investment projects in the field of energy efficiency. The example of Rakvere city.

Seminar “Intertwined and inspired: localising Sustainable Development Goals together.”

Andres Jaadla,

24.09.2025, Ādaži Cultural Centre,

Sustainable Municipalities’ Week 2025, European

Sustainable Development Week.

“Empowering LRGs for Sustainable Policy Implementation and Civic Engagement in Europe”(SPICE)

City of Rakvere

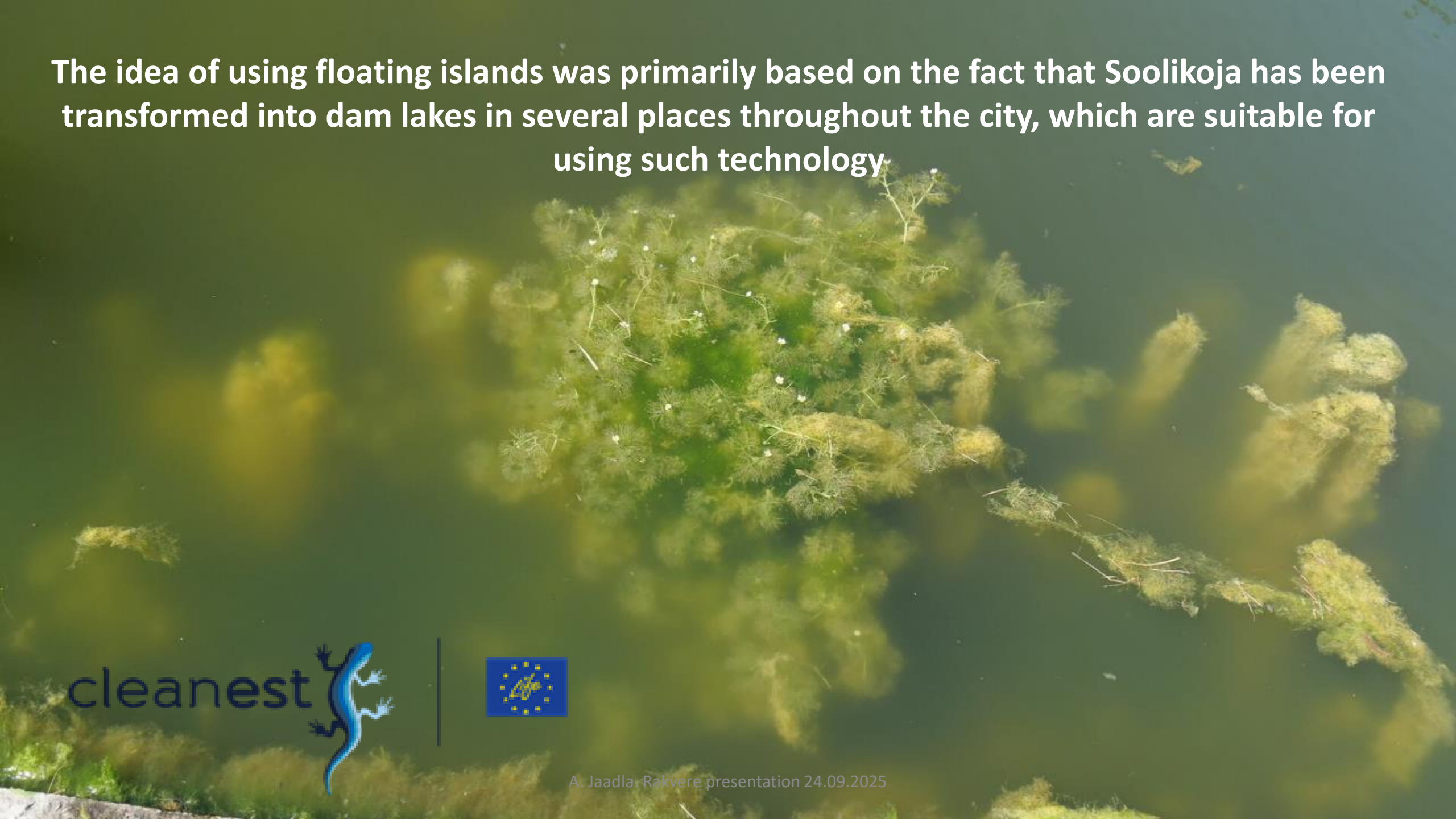
A. Jaadla. Rakvere presentation 24.09.2025

First case – Urban greening , water resilience , Case of Rakvere

Urban Greening , water resilience , Case of Rakvere - Floating islands

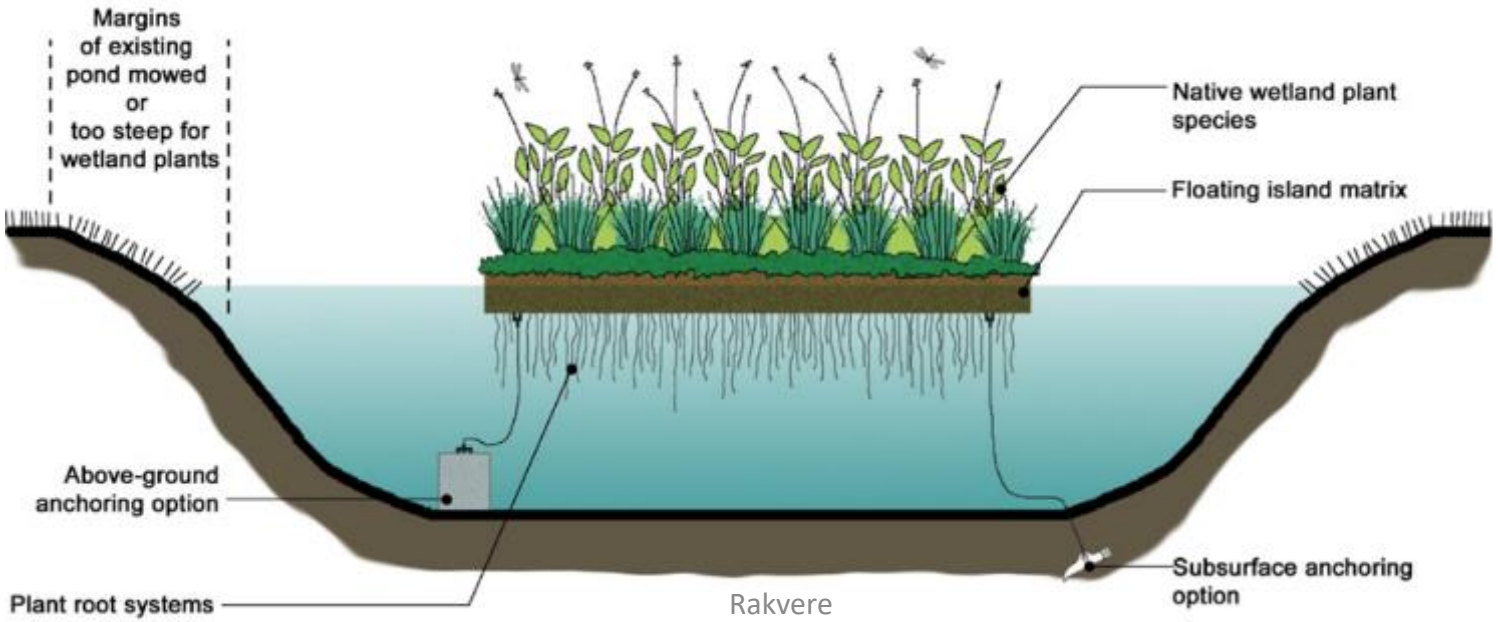

Improving the aquatic environment of Soolikaoja is part of the ten-year project LIFE IP CleanEST.
cleanest
Life

The idea of using floating islands was primarily based on the fact that Soolikoja has been transformed into dam lakes in several places throughout the city, which are suitable for using such technology



Floating islands

- Floating islands were built from 200 mm PEM pipes which were connected to create octagonal and rectangular frames, the bottom of which is made of metal mesh. Coconut mat and rock wool were installed on the net as the soil for the plants. The plants were planted in a way so that the roots reach the water.



Plants were planted on 11 floating islands, which clean the water through the roots from the pollutants.

As much as they pick up these nutrients, but what also helps, is the biofilm, which is a layer of bacteria growing on the roots of the plant, and this layer of bacteria is what does the most of the work


PAROC

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LIFE IP CleanEST installed floating islands to clean Soolikaoja creek in Rakvere

The second argument was that the **solution is relatively inexpensive and works passively.**

As a bonus, the islands offer new habitats for aquatic life and nesting sites for birds.

Second case - energy efficiency and renovation experience, Case of Rakvere

City of Rakvere - energy efficiency and renovation experience

Estonia's first nearly zero energy - adminstrative building is located in Rakvere - Rakvere Smart House

Estonia's first nearly-zero energy - public building is located in Rakvere

Estonia’s one of first nearly-zero energy – kindergarten is located in Rakvere

Estonia’s one of first nearly-zero energy – kindergarten is located in Rakvere

More energy efficient buildings in Rakvere

- Rakvere is the first city in Estonia where most Soviet-era apartment buildings have been renovated !

Insulation of multiapartment buildings –

District **housing** renovation pilot project in Rakvere

Seminari street in Rakvere

Approx. 70% of Rakvere's citizens live in multi-apartment buildings.

The city produces ca 16 000 tons of CO_2.

CO_2 emissions would be diminished by 8,2% if all multiapartment buildings went through insulation works of houses


Jaakkolakvere presentation 24-09-2025


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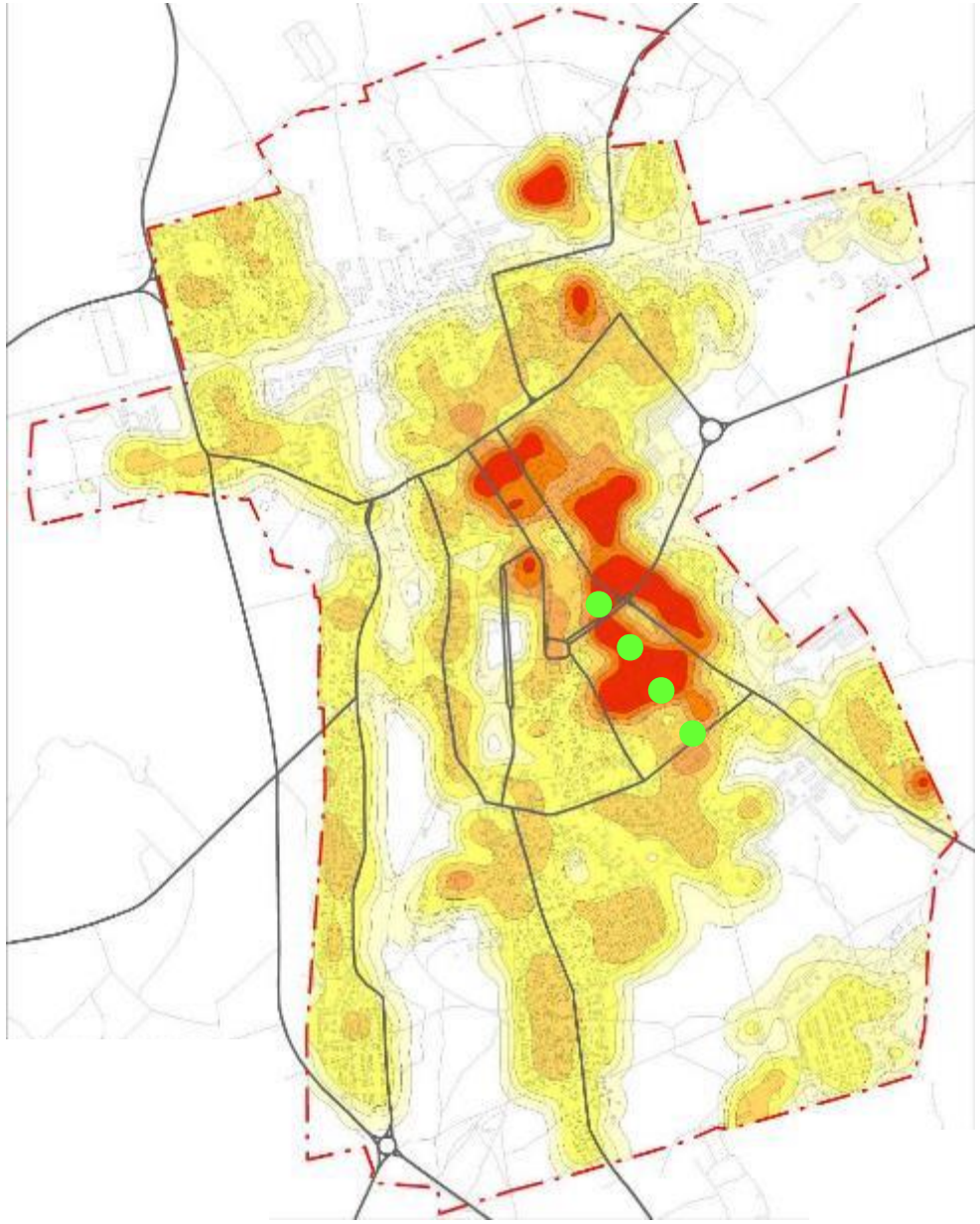


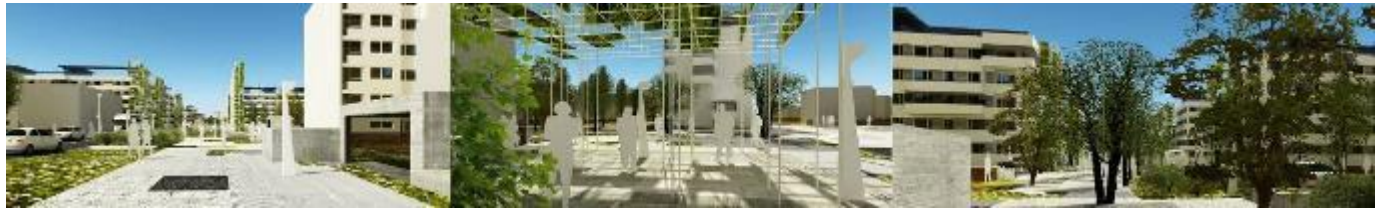
- ✓ District with the highest density of population:
- ✓ 18 apartment buildings,
- ✓ 8 different types of apartment buildings,
- ✓ about 900 apartments, area 1,8km²

Architectural competition

VÕIDUTÖÖD

„Elementaalne” autorid: Kai Süda, Diana Taalfeld ja Risto Parve OÜ KARISMA Arhitektid

„Linna Metsa” autorid: Kadri Klementi, Aet Ader, Grete Soosalu, Kaidi Õis, Karin Tõugu, Mikk Meelak ja Kalle Komissarov

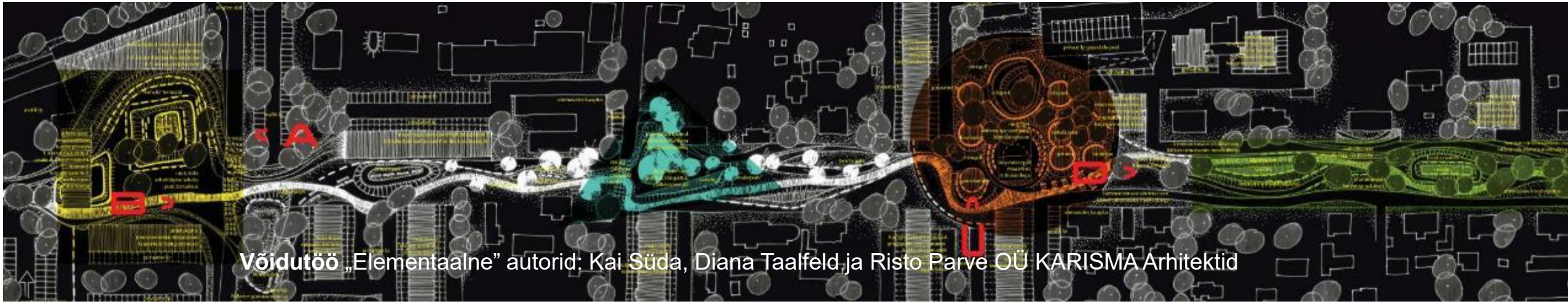


OSTUAUHIND: „Roheline Konstruktor” autorid Mihkel Tüür, Ott Kadarik ja Villem Tomiste Arhitektuuribüroo KOSMOS OÜ

OSTUAUHIND: „Liinid” autorid Eva Kedelauk, Kristel Niisuke, Maie Raud, Kristiina Remmelkoor, Olav Remmelkoor ja Siim Tiisvelt

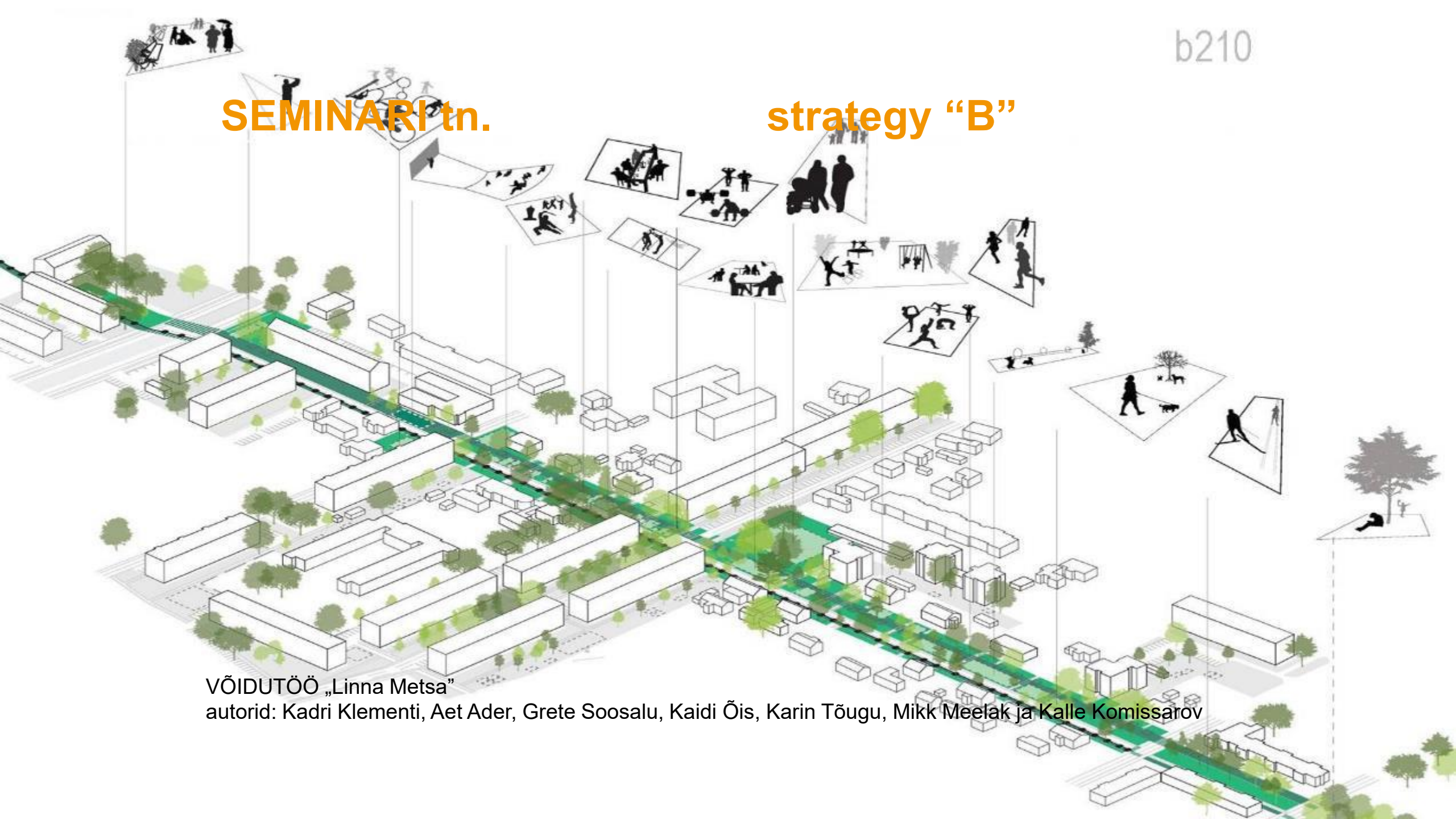
OSTUAUHIND: „Fake Forest” autorid: Lea Järve- Eronen, Erik Joasare ja Tiina Tuulik Arhitektuuribüroo Järve & Tuulik

SEMINARI tn. strategy “A”



Võidutöö „Elementaalne” autorid: Kai Süda, Diana Taalfeld ja Risto Parve OÜ KARISMA Arhitektid

SEMINARI tn. strategy “B”



VÕIDUTÖÖ „Linna Metsa”
autorid: Kadri Klementi, Aet Ader, Grete Soosalu, Kaidi Õis, Karin Tõugu, Mikk Meelak ja Kalle Komissarov

Before

Plans

NU-NU Arhitektuur

Today

Before

Enne ja pärast: Kortermaja lahendus praegu


SEMINARI

… MODERN DESIGN SOLUTIONS


23

Third case - energy efficiency and renovation experience, Case of Estonia

Case Estonia Renovation support measures in Estonia

Renovation support measures since 2010

- ≈1400 buildings
- ≈**255 mln** € for subsidies
- ≈**650 mln** € total investments

Mainly deep renovation

- Insulation of building envelope
- Replacement of windows
- Renovation of the heating system
- New ventilation system with heat recovery
- PV-panels

On average 50…60% reduction in energy use

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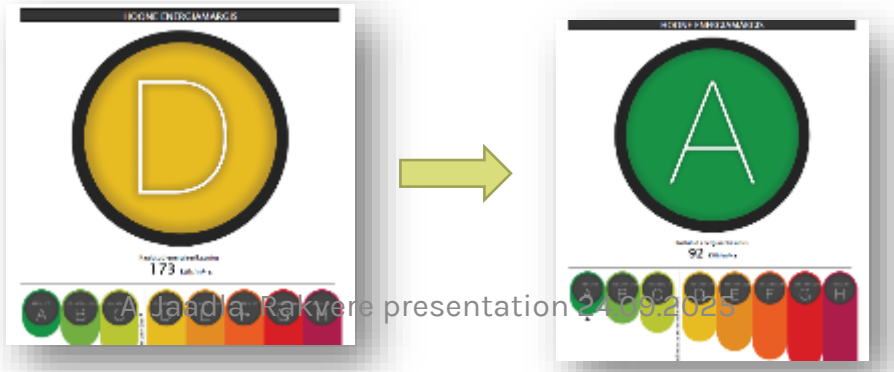
Prefab renovation – first pilots

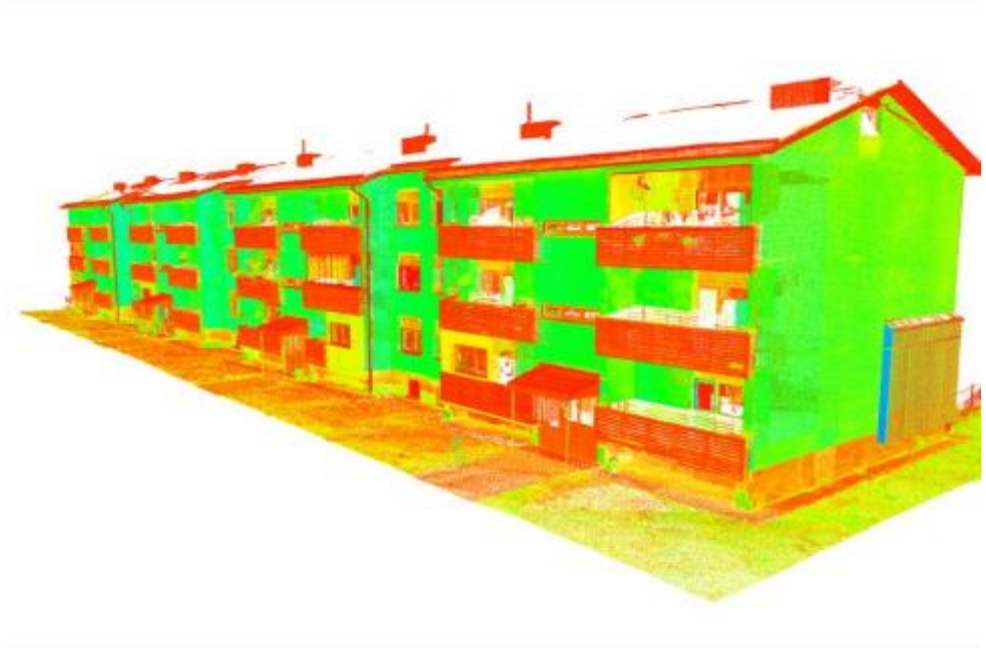
Renovation of Taltech dormitory - 2018

- **MORE-CONNECT** - prefabricated multifunctional renovation elements
- https://www.more-connect.eu/

Renovation of apartment building - 2021

- **DRIVE 0** – modular circular deep renovation
- https://www.drive0.eu/





Prefab to mainstream retrofit

The market conditions were favorable for innovation:

- Over a decade of experience in deep renovation.
- Well-established renovation market, with participation from apartment associations, designers, and main contractors.
- Existing support measures.
- Many apartment buildings are constructed based on standard designs (scalability)
- Two successful pilot renovation projects (an example of why participation in research and innovation projects is beneficial).
- The strong woodhouse industry.

Challenges that need to be addressed:

- Marketing materials
- Few experienced companies
- Further research and development to address some of the technical challenges.

Mainstreaming prefab renovation – pilot measure

- The budget 18 million euros, support rate 50%
- **19 buildings, 823 apartments, a total net area of 49 360 m²**
- Typical apartment buildings
- Different LRA-s arround Estonia
- Deep renovation with installation of mechanical heat recovery ventilation
- Facade insulation by using prefabricated insulation elements
- Two consortiums of companies
- Average cost was 640 €/m²

Ongoing renovations in diferent LRA –s arround Estonia 2024 - 2025






Ongoing renovations in diferent LRA –s 2024 /25








Conclusions and future plans

In summary

- The main obstacles are not related to technical issues.
- The public sector and LRA –s can accelerate the process by taking the lead.
- Having the support of major companies or industry associations is crucial.
- When companies see a business case, they are more likely to follow.
- To make a business case, it is essential that the product is financially feasible for homeowners.

Plans for prefab renovation

- **There were 19 buildings included in the dedicated program for renovating with prefabricated elements.**
- Prefab renovation will now be included in the state's renovation subsidy program, with a specific budget allocated to scale up the process.

Additional information

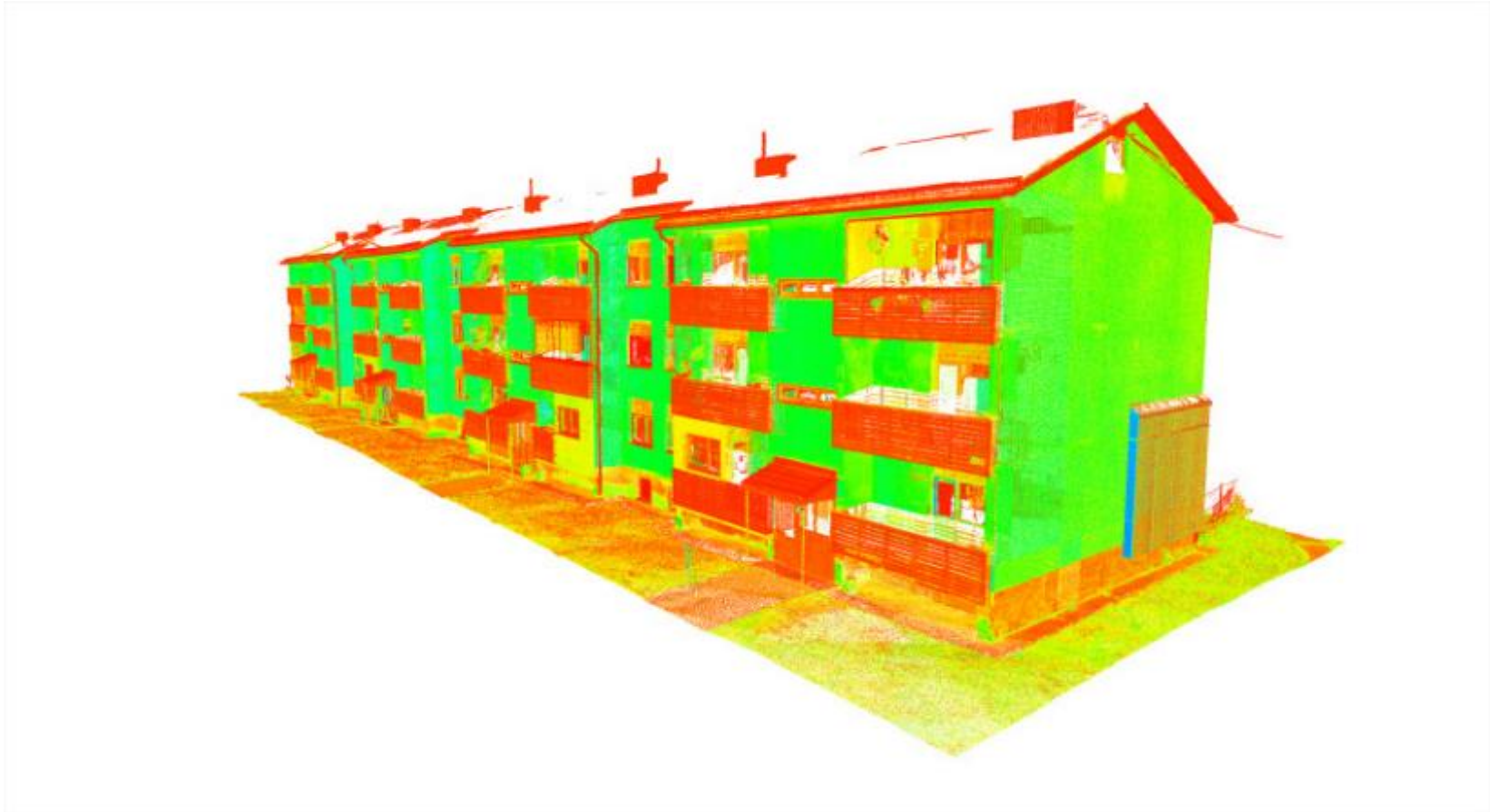
Grants for prefab renovation In Estonia

- https://www.kredex.ee/en/element

Animations and videos

- https://www.youtube.com/watch?v=USTB3u1WnEI&ab_channel=WoodhouseEstonia
- https://www.youtube.com/watch?v=TX0k50oSuJU&ab_channel=WoodhouseEstonia
- https://www.youtube.com/watch?v=XOeTnDXHCuk&ab_channel=TimbecoWoodhouse

… Estonian experience - providing innovation in housing for future … deep renovation - using additional prefabricated insulation elements



… providing innovation in housing for future - deep renovation - using additional prefabricated insulation elements

CONCLUSIONS

The global and european sustnainable goals will only be achieved by empowering local and regional authorities and providing them with

direct funds to deliver the priority investments that citizens need.

LESSON LEARNED: the case of Rakvere and Estonia shows, that the green future of the citizens of Europe is in our hands!

We need to start the work from our cities and communities!

Co-funded by the European Union

THANK YOU !

ĀDAŽU NOVADS
LATVIJAS PAŠVALDĪBU SAVIENĪBA
LATVIAN ASSOCIATION OF LOCAL AND REGIONAL GOVERNMENTS
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