

The event is an official  
#EUGreenWeek partner event

#SkillsforGreenInfrastructure

Nordic Regions

# Skills for Green Infrastructure



Thursday 8 June | 10.00-12.00



**The event is an official  
#EUGreenWeek partner event**

**#SkillsforGreenInfrastructure**

# Welcome

**Julia Jokelin**

*Deputy Head of Office, Helsinki EU Office*



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# Introduction

**Louise Coffineau**

*Senior Policy Advisor, Environment and Climate, EUROCITIES*



# Housekeeping rules



Please be aware that you have been automatically muted and your video has been switched off.



Please enter any questions in the chat box. They will be answered during the panel discussion and Q&A session.



Please note that this meeting will be recorded.



Please Tweet as much as you like by using the hastags  
[#EUGreenWeek](#) [#SkillsforGreenInfrastructure](#)

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# Agenda

- 10.00 Welcome**  
Julia Jokelin  
*Deputy Head of Office, Helsinki EU Office*
- 10.10 Keynote**  
Egbert Holthuis  
*Head of Unit - Jobs, Skills and Social Policies, Directorate-General for Employment, Social Affairs, and Inclusion (DG EMPL), European Commission*
- 10.30 Innovation for sustainability – a PhD programme for societal transformation**  
Siw Fosstenløyken  
*Professor, Innovation, Digital Transformation and Sustainability, OsloMet University*
- 10.45 A Green network city promoting sustainability – from strategies to implementation**  
Maria Jaakkola  
*Head of Research and Development, Urban Space and Landscape Planning, City of Helsinki*
- 11.00 Anchoring knowledge and innovation within green mega infrastructure**  
Stig Rømer Winther  
*Managing Director of Femern Belt Development and Lead of Fehmarn Innovation*
- 11.15 Ensuring a skilled workforce for the railway of the future**  
Elin Kebert  
*Expert on skills supply, The Swedish Construction Federation, board member of Järnvägsskolan (Railway college)*
- 11.30 Panel discussion and Q&A**
- 11.55 Concluding remarks**  
Moderator Louise Coffineau  
*Senior Policy Advisor, Environment and Climate, EUROCITIES*
- 12.00 Networking lunch**

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## Keynote

**Egbert Holthuis**

*Head of Unit - Jobs, Skills and Social Policies,  
Directorate-General for Employment, Social Affairs, and Inclusion (DG EMPL),  
European Commission*



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# Innovation for sustainability – a PhD programme for societal transformation

**Siw Fosstenløyken**

*Professor, Innovation, Digital Transformation and Sustainability,  
OsloMet University*



OSLOMET

# Innovation for Sustainability – a PhD Programme for Societal Transformation

**Professor Siw Fosstenløyken**  
Department of Computer Science  
Faculty of Technology, Art and Design

OSLO METROPOLITAN UNIVERSITY  
STORBYUNIVERSITETET





OSLOMET



**3rd** largest university  
in Norway



**41** Bachelor's programmes



**21,900** Students



**59** Masters's programmes



Housing starts  
at **3,200 NOK**



**6** International  
Master's programmes



Tuition fees: **0 NOK**  
EU/EEA only



**7** PhD programmes  
388 PhD candidates

**Studies within:** Health sciences, Technology, Art and Design,  
Social Sciences, Education and International Studies



OSLOMET

# The PINS programme

OSLO METROPOLITAN UNIVERSITY  
STORBYUNIVERSITETET



# This is PINS

- Interdisciplinary, applied and project-oriented
- **Owners:** Dept. Product Design, Dept. Computer Science, Dept. Art, Design and Drama, Centre for Welfare and Labour Research
- Suitable for people who want to do R&D work within the business or public sector and academia
- Adapted to the Industrial and Public sector PhD programs funded through the Norwegian Research Council and other externally funded research projects.
- **Innovation for sustainability and societal transition** means to not only deliver improved economic performance, but more importantly to foster an enhanced environmental and social performance.
- PINS aims to grow the development and well-being of human needs and institutions while respecting natural resources and regeneration capacities.





# Delivering knowledge to solve societal challenges

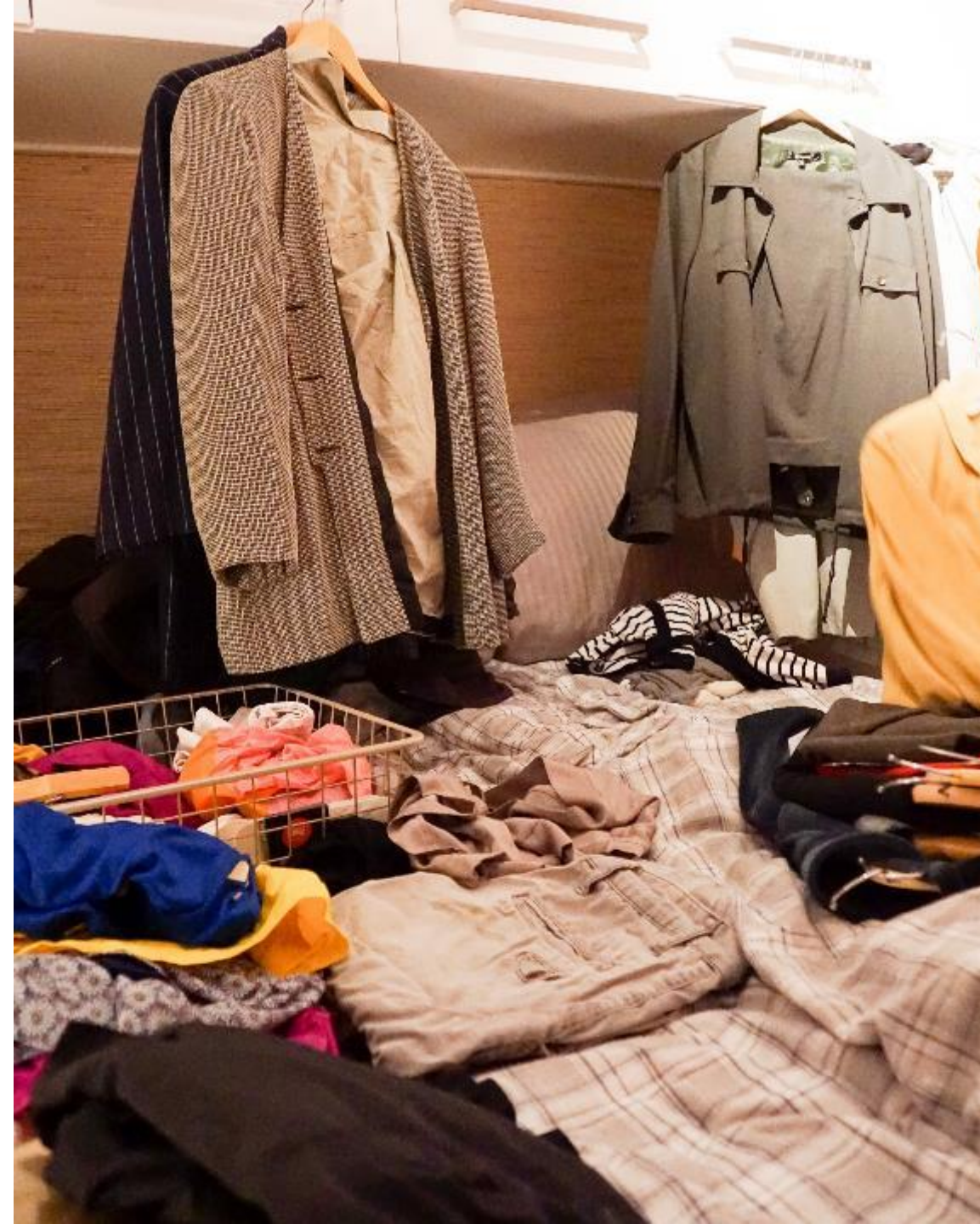


## Wardrobe study on waste reduction:

### Dressed for the Occasion Vilde Haugrønning

Knowledge of how elements of practice impact the material flow of garments in wardrobes and clothing volumes

1. What does it mean to be 'dressed for the occasion': all practices that require clothing, such as jogging, going to work, swimming, eating out, staying home
2. The expectation of variety: norms and social standards that underpins much of our daily practices and create expectations to vary between clothing



**Wardrobe study on the drivers behind the volume of clothing:**

**Want Not, Waste Not Anna Schytte Sigaard**

Minimizing synthetic textile waste in households.

1. How and why is textile waste generated? How are textiles disposed?
2. What do the textiles consist of? And what value do people attach to used textiles, and how does this affect textile waste?

Aim: connect in-depth knowledge of wardrobe studies to broader societal structures of transition



**Energy study from a social science perspective: relationship between humans and energy beyond economics, technology and engineering**

**Altered landscapes of a post-carbon future: local stakeholder perspectives and the visibility of renewable energy systems in small island landscapes Neil Gordon Davey**

1. What can stakeholder experiences in the Orkney Islands reveal about the relationships between humans and energy systems that change the local landscape?
2. How do the ways in which local stakeholders visually relate to their environment influence their perception of renewable energy systems in remote rural and island landscapes?

**Aim:** To learn from the relationships between humans and energy systems to inform future planning and implementation of transitions

*“I spend some time with Pelamis and reflect”*

*Neil Gordon Davey  
PhD student and photographer*



Photograph © Neil Gordon Davey

# Ecosystem of skills for transformation

New  
knowledge

New  
practice

## PINS further development

- PINS is a NORSI member - Nordic Research School in Innovation and Entrepreneurship
- Future international interdisciplinary collaboration will be important
- A research center “Innovation for Sustainability”
- Close collaboration with sustainability stakeholders within EU is crucial



OSLOMET

**Many thanks!**

More about PINS:  
<https://www.oslomet.no/en/study/tkd/innovation-for-sustainability-phd>

[siwfosst@oslomet.no](mailto:siwfosst@oslomet.no)

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STORBYUNIVERSITETET



ENDRE BUNNTEKST VIA MENYEN SETT INN -> TOPPTEKST/BUNNTEKST

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# A Green network city promoting sustainability – from strategies to implementation

**Maria Jaakkola**

*Head of Research and Development, Urban Space and Landscape Planning,  
City of Helsinki*



# **A Green Network City promoting sustainability – from strategies to implementation**

**Maria Jaakkola**

**Dr.Sc. (Arch.), Landscape Architect  
Head of Research and Development  
Urban Environment Division  
City of Helsinki**

**Helsinki**





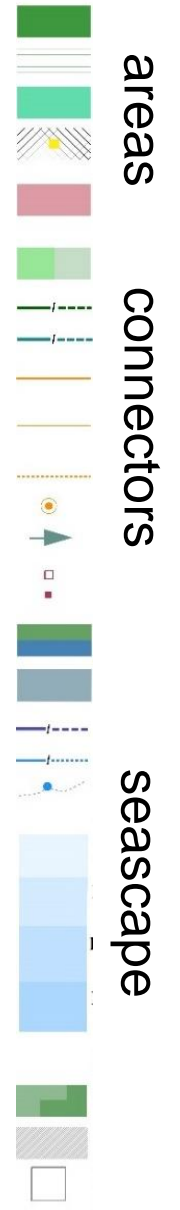
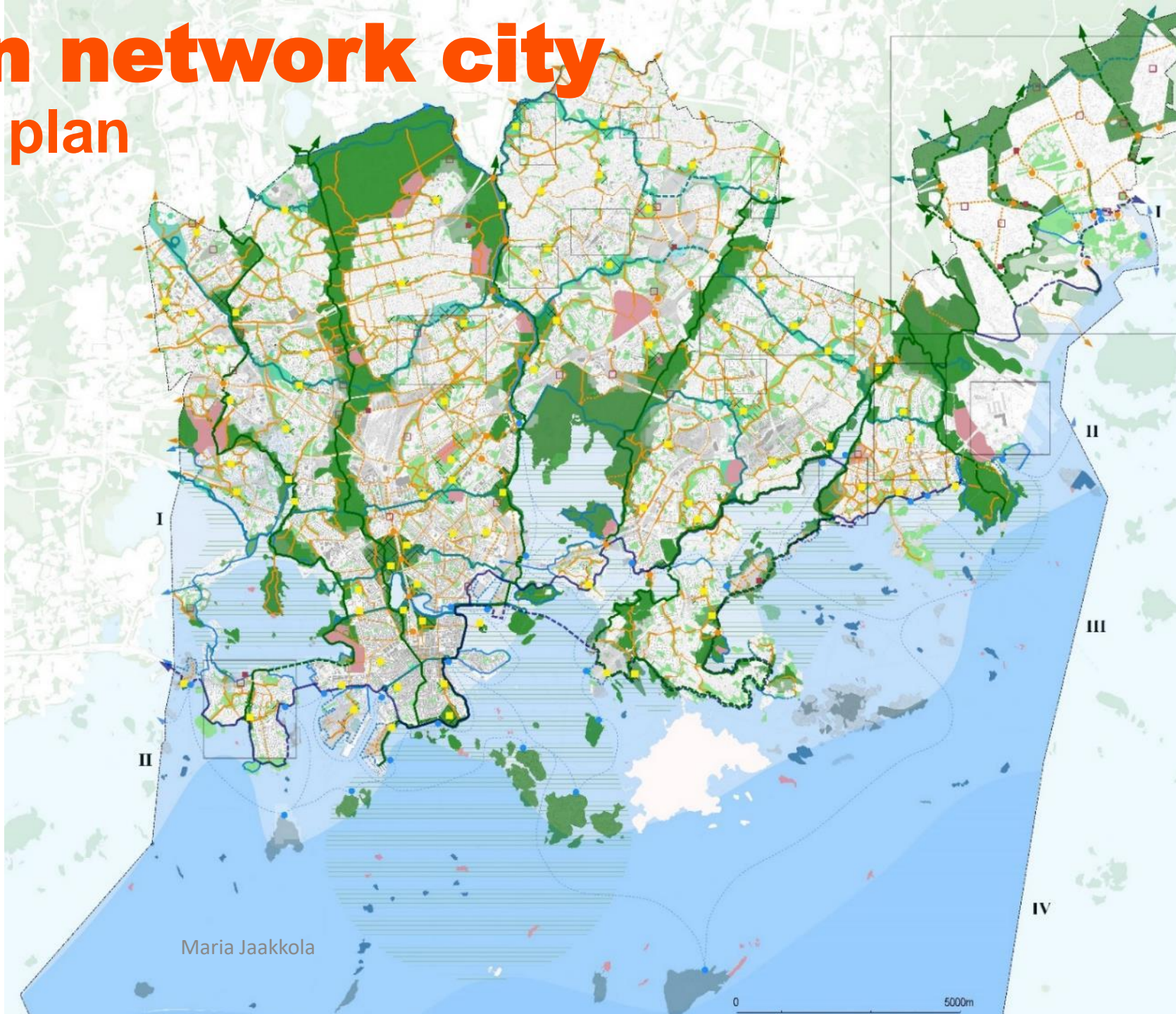
**Green and Blue Helsinki 40% green**

Urban forests 4800ha, Parks 1150ha, public seashore 130km, 350 islands

**Growing city, 658 000 ppl now, in Master plan 2050: 860 000 ppl**

# Green network city

## VISTRA plan



Helsinki

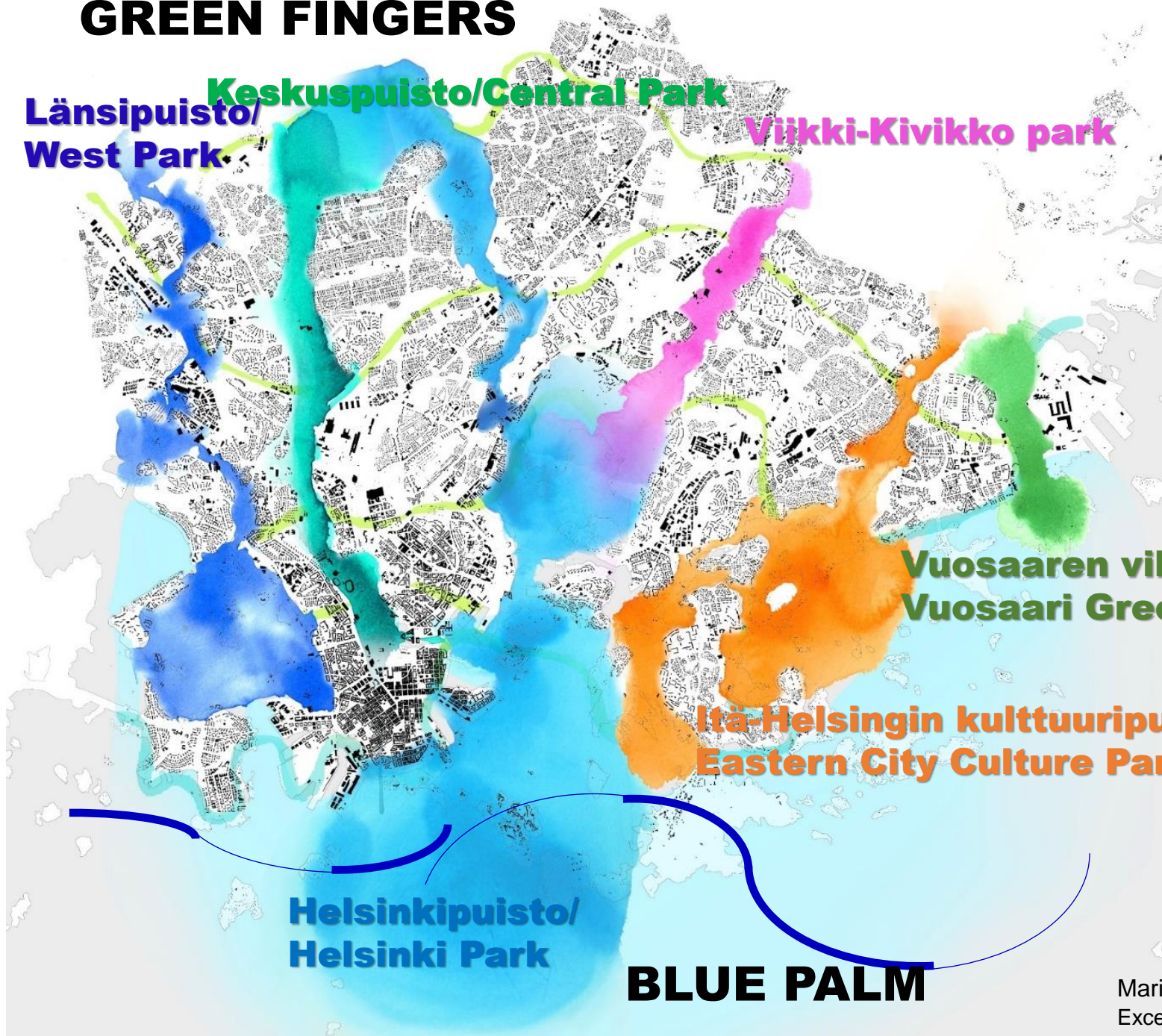
Maria Jaakkola

0 5000m



# GREEN FINGERS

**Länsipuisto/  
West Park** **Keskuspuisto/Central Park** **Viikki-Kivikko park**



**Vuosaaren vihersormi  
Vuosaari Green Finger**

**Itä-Helsingin kulttuuripuisto  
Eastern City Culture Park**

**Helsinki  
Helsinki Park**

## BLUE PALM

Helsinki

Maria Jaakkola  
Excerpt from VISTRA



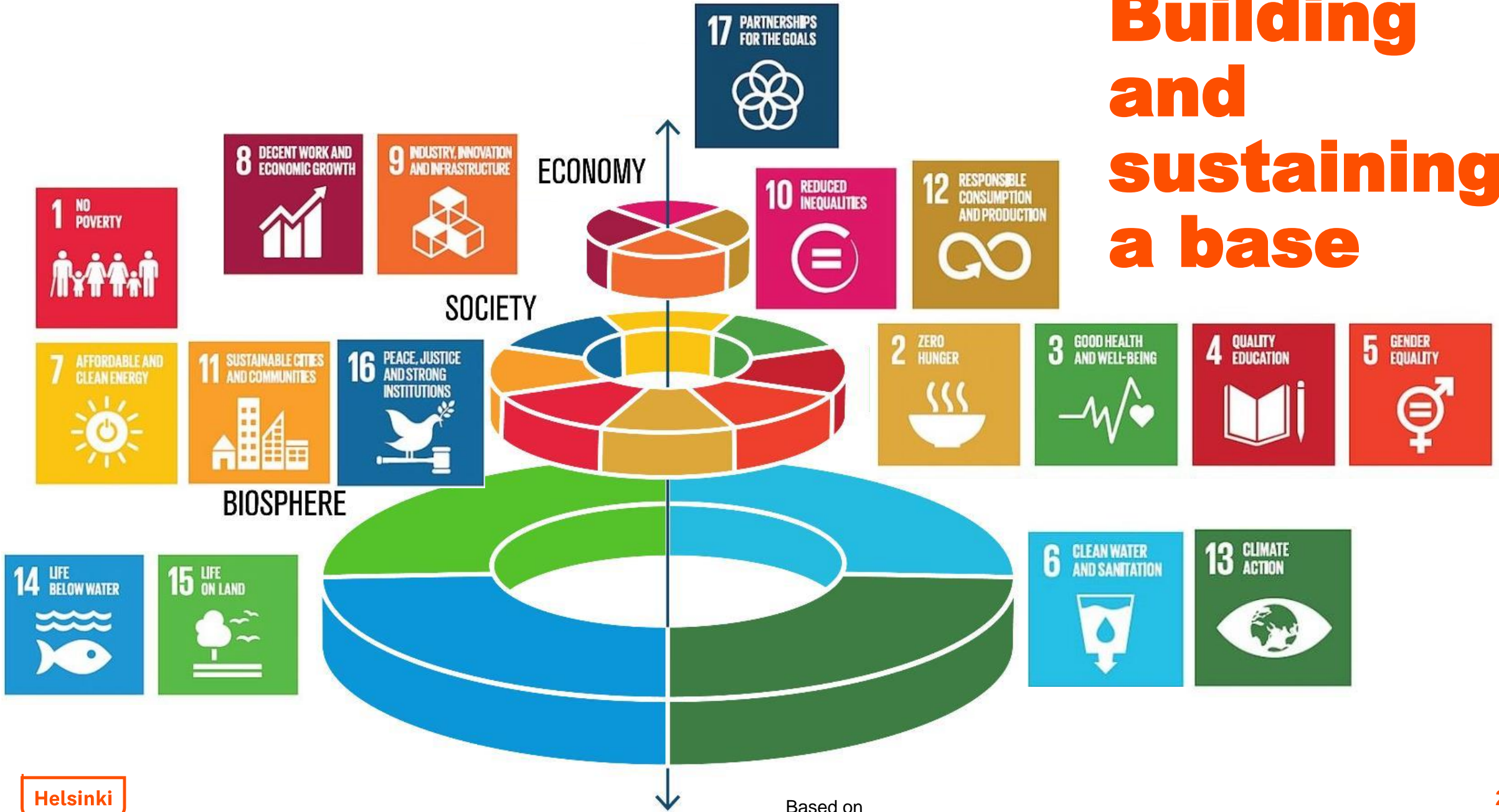


# Blue Palm



Helsinki

# Building and sustaining a base





# How do you make things happen?

C  
O  
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T

STRATEGIC  
LEVEL  
(A4)

TACTIC LEVEL  
(MAPS)

OPERATIVE  
LEVEL  
(PLACES)

Strategic objectives



Thematic strategic policies and programs



Implementation programs, network plans

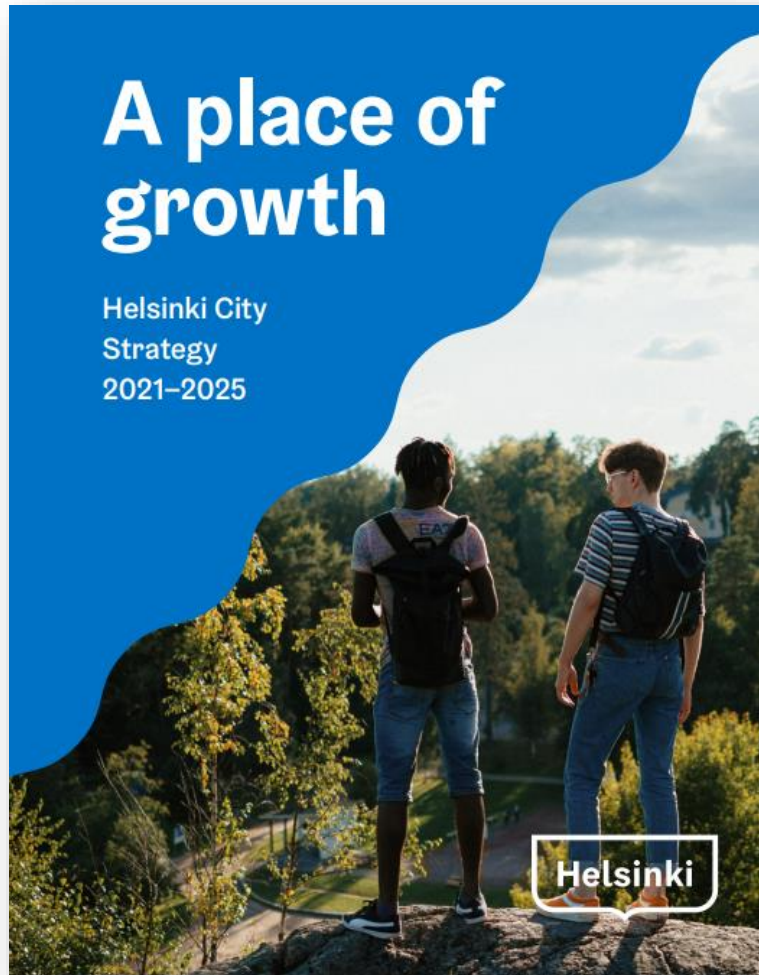


Implemented projects, plans/designs  
and maintenance

Monitoring and  
constant updates and  
development



# Green Infra in Helsinki City strategy



- The most equitable and effective place to learn-> **playgrounds**
- Cultivating safe neighbourhoods with distinctive identities -> **neighborhood parks**
- **Ambitious climate objectives and nature conservation**  
-> **carbon smart green, stormwater management, resilience, equal access to nearby nature to all**
- A smoothly functioning and beautiful city -> **green beauty**
- Improving the health and wellbeing of Helsinki residents -> **exposure to health benefits**
- Data and digitalisation help run a smart city -> the **green twin**

# Citywide Programs and Policies for guidance and focus in the green network

Biking promotion program 2014

Urban tree policy 2014

Mobility program 2018

Green Areas Strategy 2013, 2016

Circular economy action plan 2023 (underway)

Sustainable Urban Mobility Plan 2017

Play Services Policy 2022

Stormwater program 2018

Biodiversity promotion program 2021

Maritime strategy 2019

Carbon Neutral Helsinki 2030 Action Plan 2022

Health and wellbeing plan 2022

Beekeeping policy 2021

Forest Management Policy 2022

Cultural environment program 2022

Walkable Helsinki Promotion Program 2022

Design Guide for Walking (underway) 2023

# Accessibility Diversity Resilience



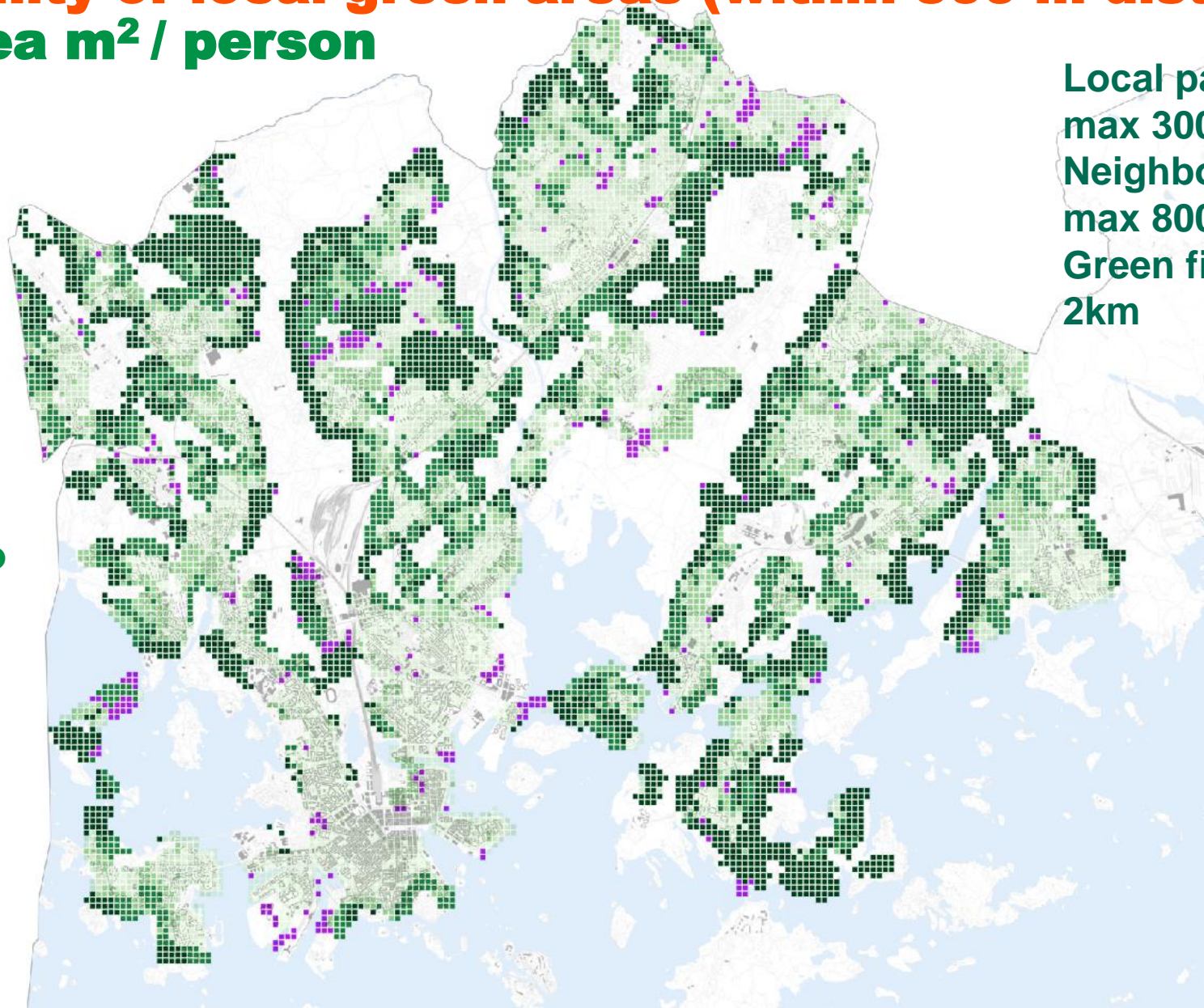
Green areas are used the more,  
the closer they are – the more  
comprehensive the network, the  
more citizens can enjoy them.

# Accessibility

# Accessibility of local green areas (within 300 m distance)

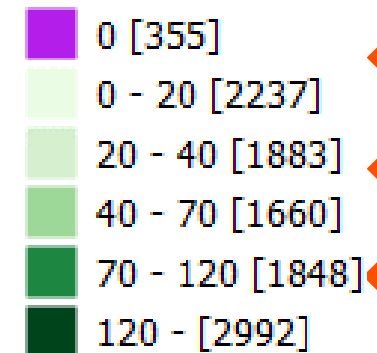
## Green area m<sup>2</sup> / person

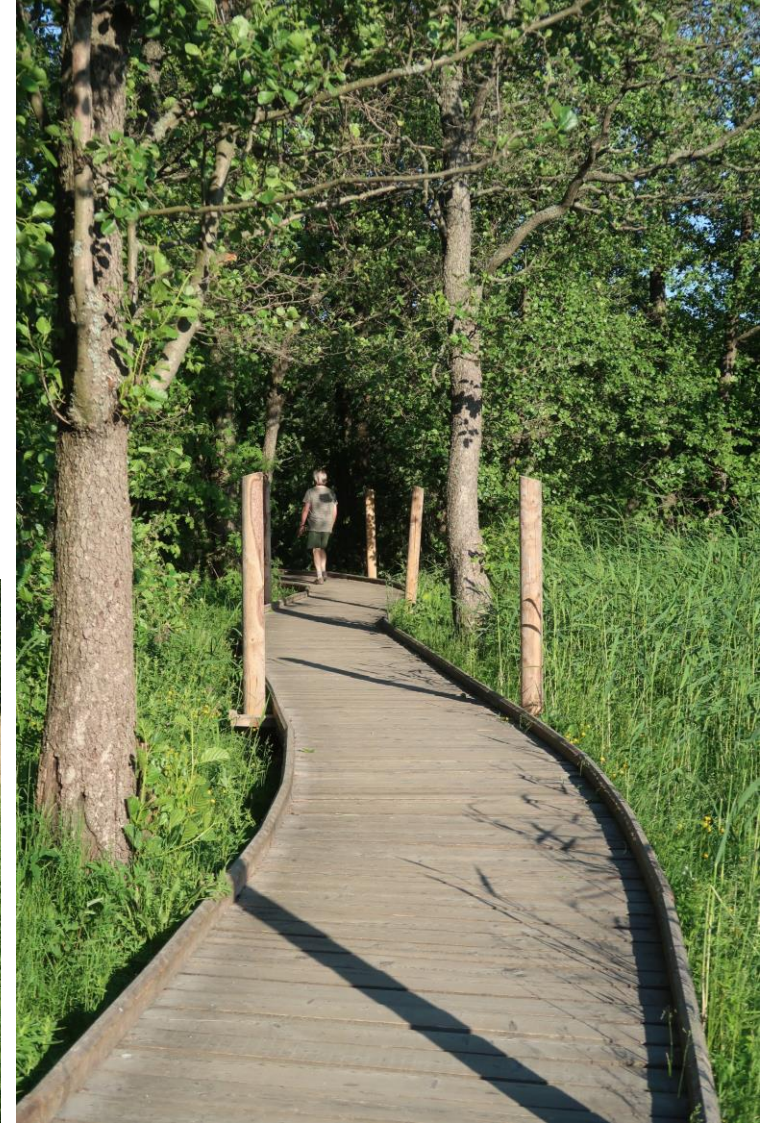
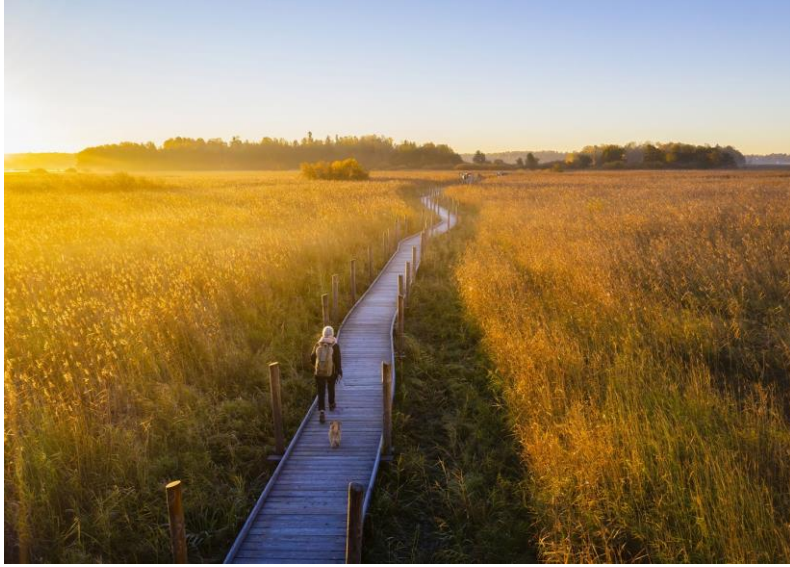
Green area divided per persons who have access to the park.



Local parks  
max 300m  
Neighbourhood parks  
max 800m  
Green fingers max  
2km

Green areas  
Accessibility  
Local green  
areas (300 m)  
m<sup>2</sup>/person





*Photo Satu Tegel*

## Lammassaari wheelchair accessible duckboard

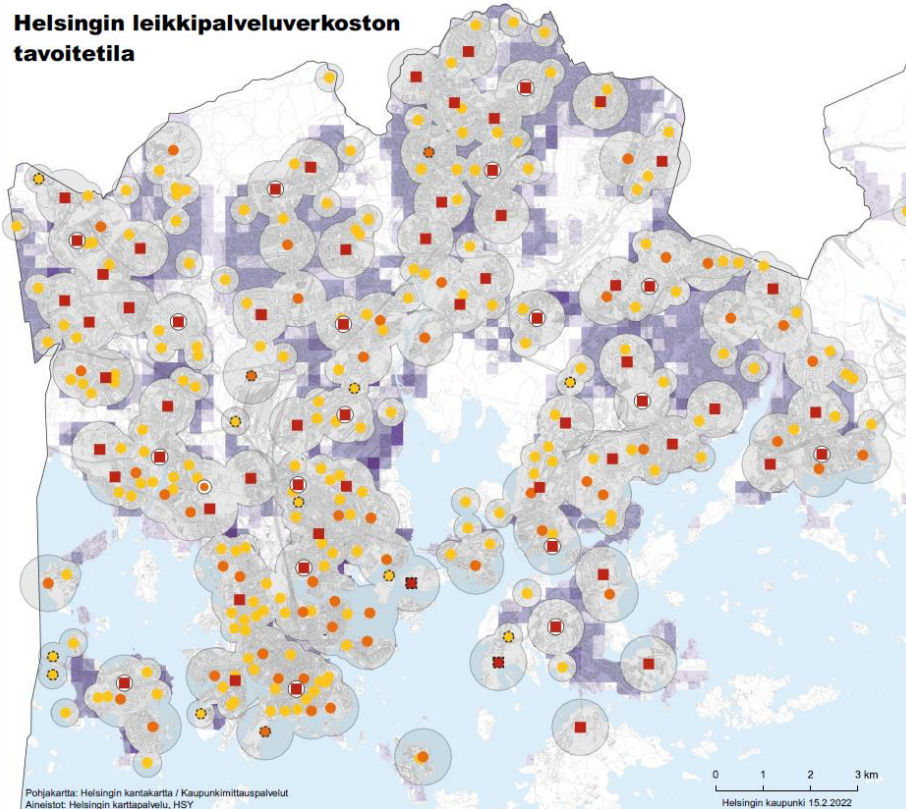
A resilient city is diverse and equitable for all groups (age, gender etc). Landscape is variable and biodiversity prevails.

**Diversity**





# Helsingin leikkipalveluverkoston tavoitetila



## Leikkipalveluverkoston katvealueet

- Leikkiuistot**
- Leikkiuisto
  - Tavoitteellinen esteettömyyden erikoistaso
- Leikkipaikat**
- Tavoitteellinen alueleikkipaikka
  - Tavoitteellinen esteettömyyden erikoistaso
  - Lähileikkipaikka
- Tavoitteellinen uusi leikkipalvelu**
- Leikkiuisto
  - Alueleikkipaikka
  - Lähileikkipaikka

- Asukkaiden lkm katvealueella (2020)**
- 5 - 100
  - 100 - 400
  - 400 - 800
  - 800 - 1400
  - 1400 - 1895

Leikkiuistojen ja alueleikkipaikkojen vaikutusalue 600 m  
Lähileikkipaikkojen vaikutusalue 300 m  
Väestörutujen koko 250 m x 250 m



For youth and children  
Pihlajamäki youth park

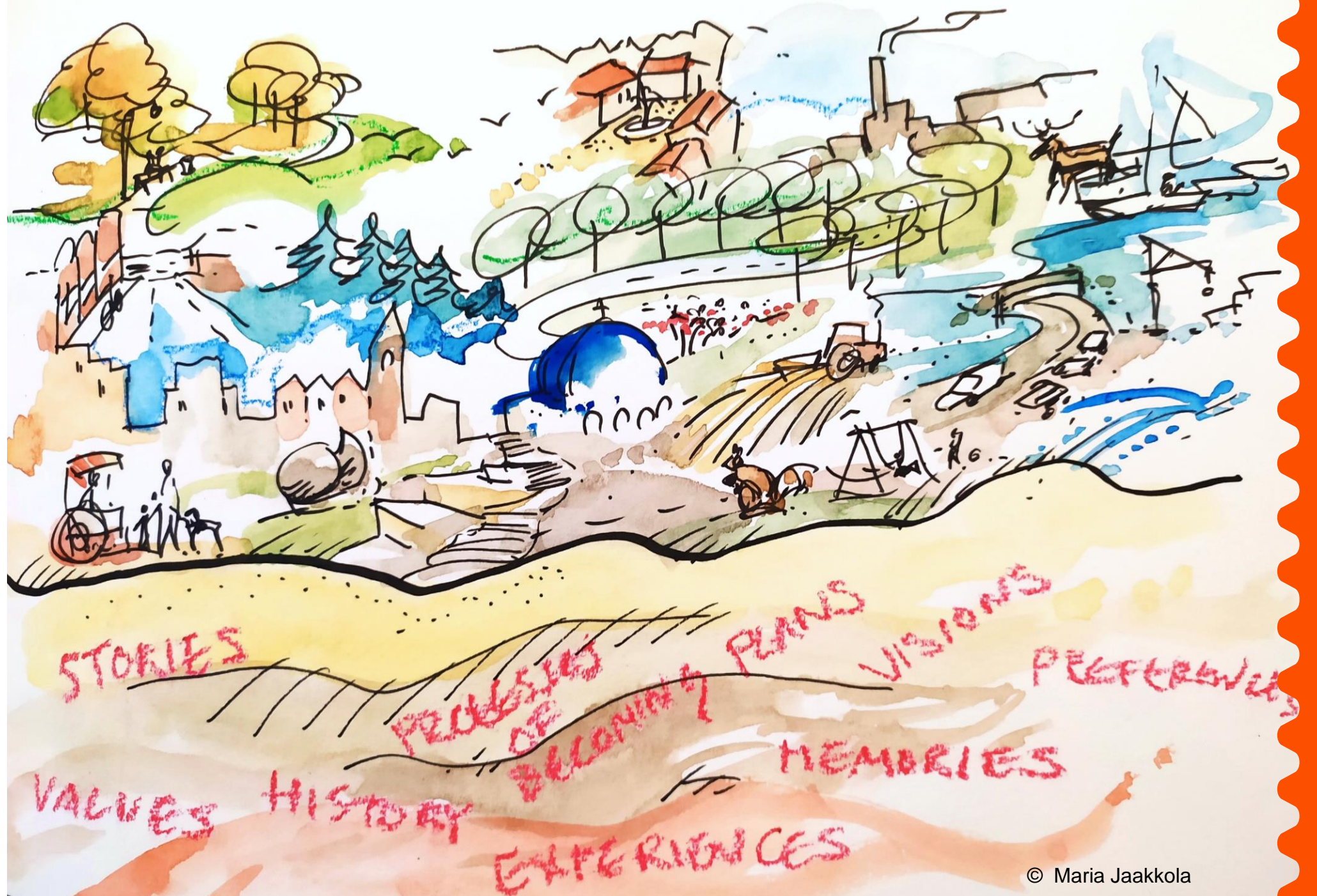
Photos A.Myllymäki, M.Jaakkola

Vennynpuisto playground

Helsinki

Photos City of Helsinki

Jaakkola M.R. 2021:  
Understanding  
Green Urban  
Landscape

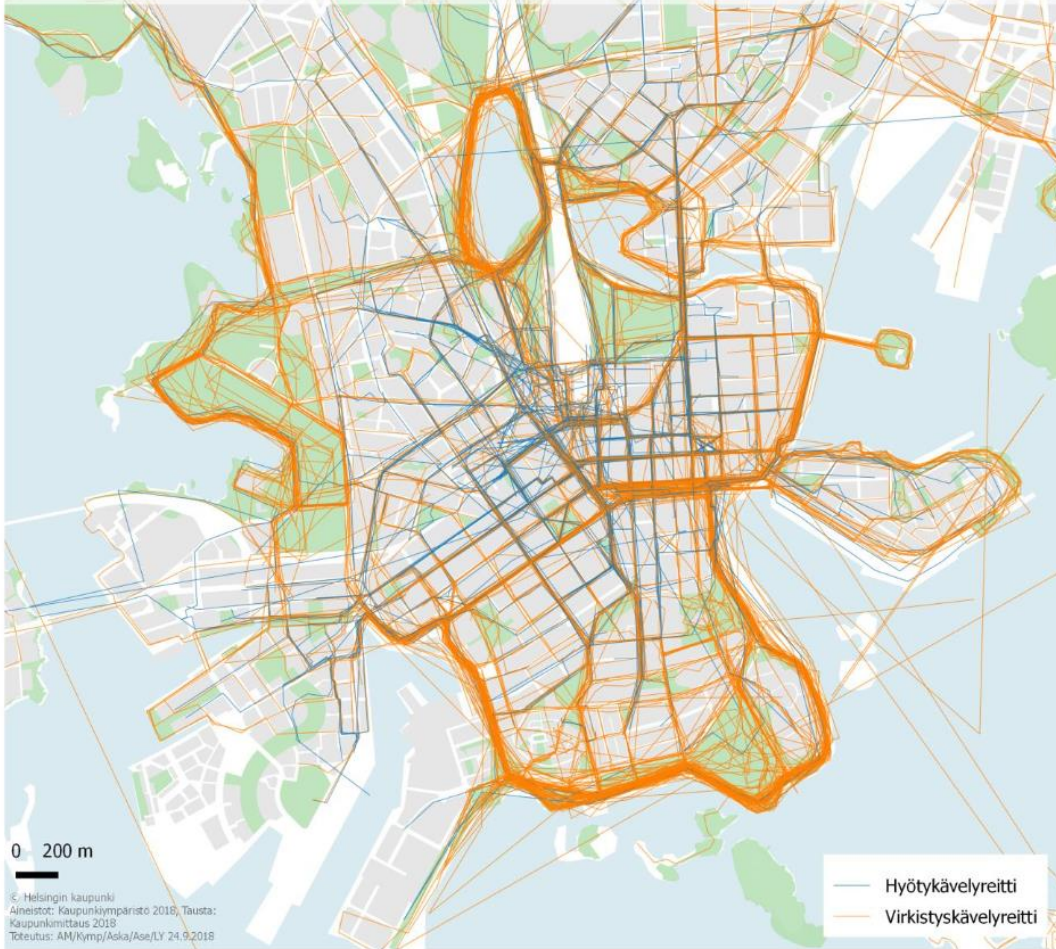


Helsinki

© Maria Jaakkola

# Preferences and choice of routes, mapped by citizens

Käytän reittiä, koska reitin varrella on kauniita rakennuksia tai muita rakennettuja kohteita  
Jalan kaupungilla -kysely 2018



Temporary summer streets closed for traffic

# Modelling green dynamics interactively

- Algorithmically 3D-modelled local species: Trees, bushes and shrubs
- Integration with GIS-data and digital twin
- Augmented reality for presenting future parks to stakeholders
- Apps helping locals to take care of neighbourhood green
- Vegetation growth and succession simulations for planning decisions
- Modelling seasonal and time-of-day changes of vegetation

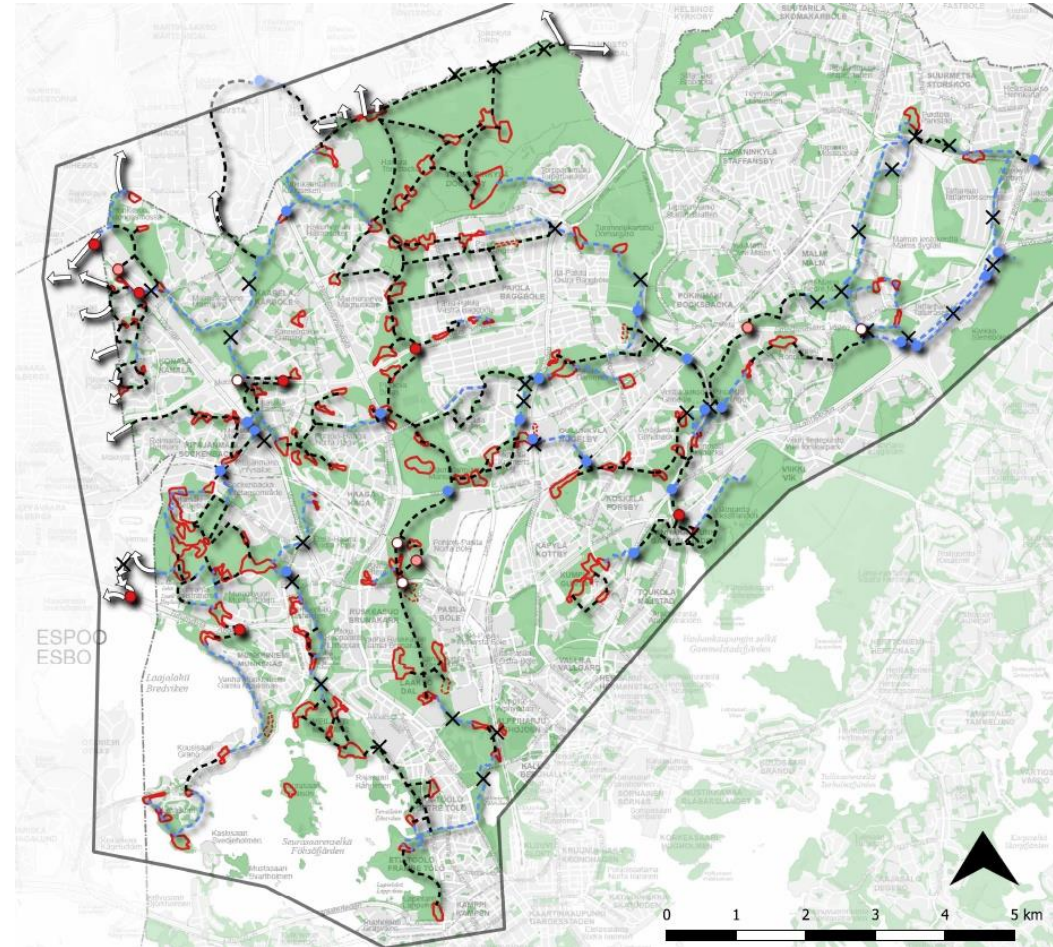
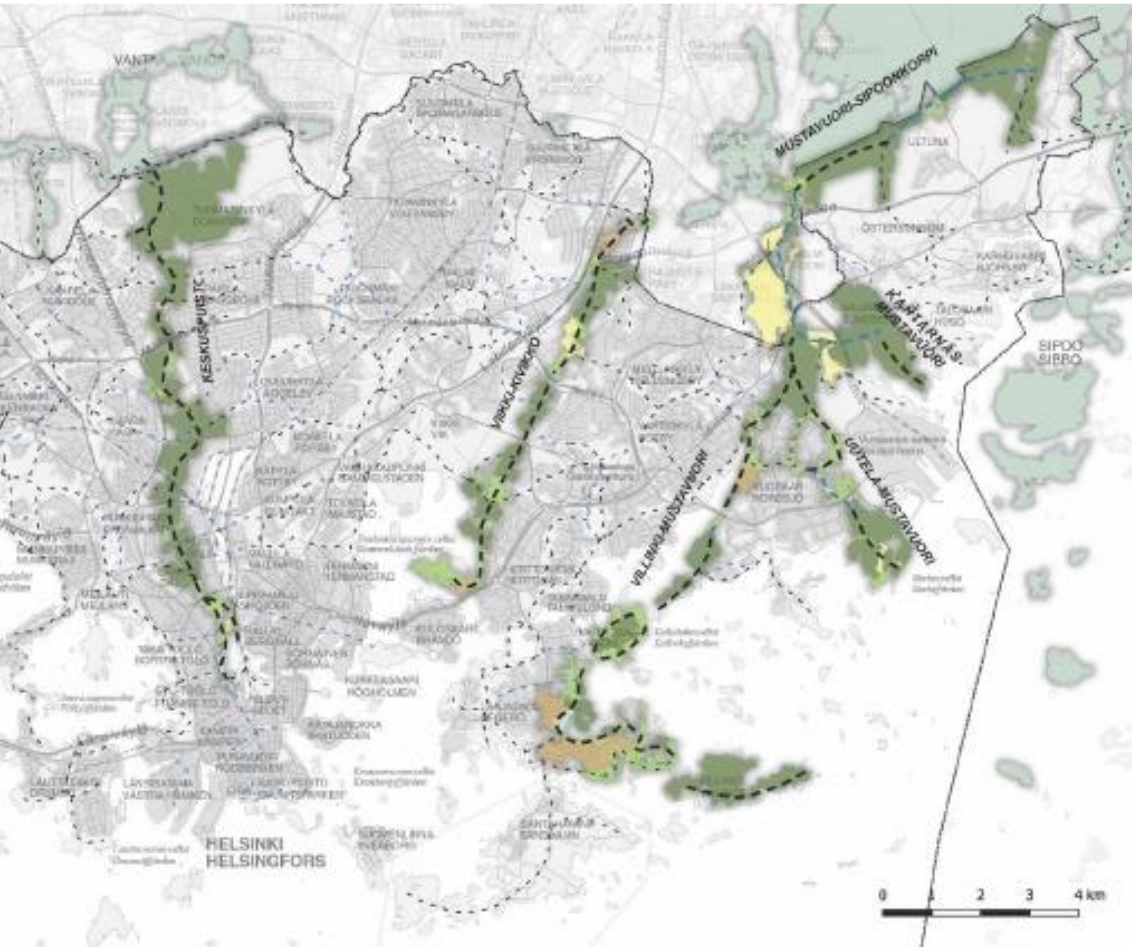
Lauri Lemmenlehti, City of Helsinki



**Sustainable city – urban green  
promotes health and natural  
stormwater management helps adapt  
to climate change.**

**Resilience**

# Forest network supporting conservation



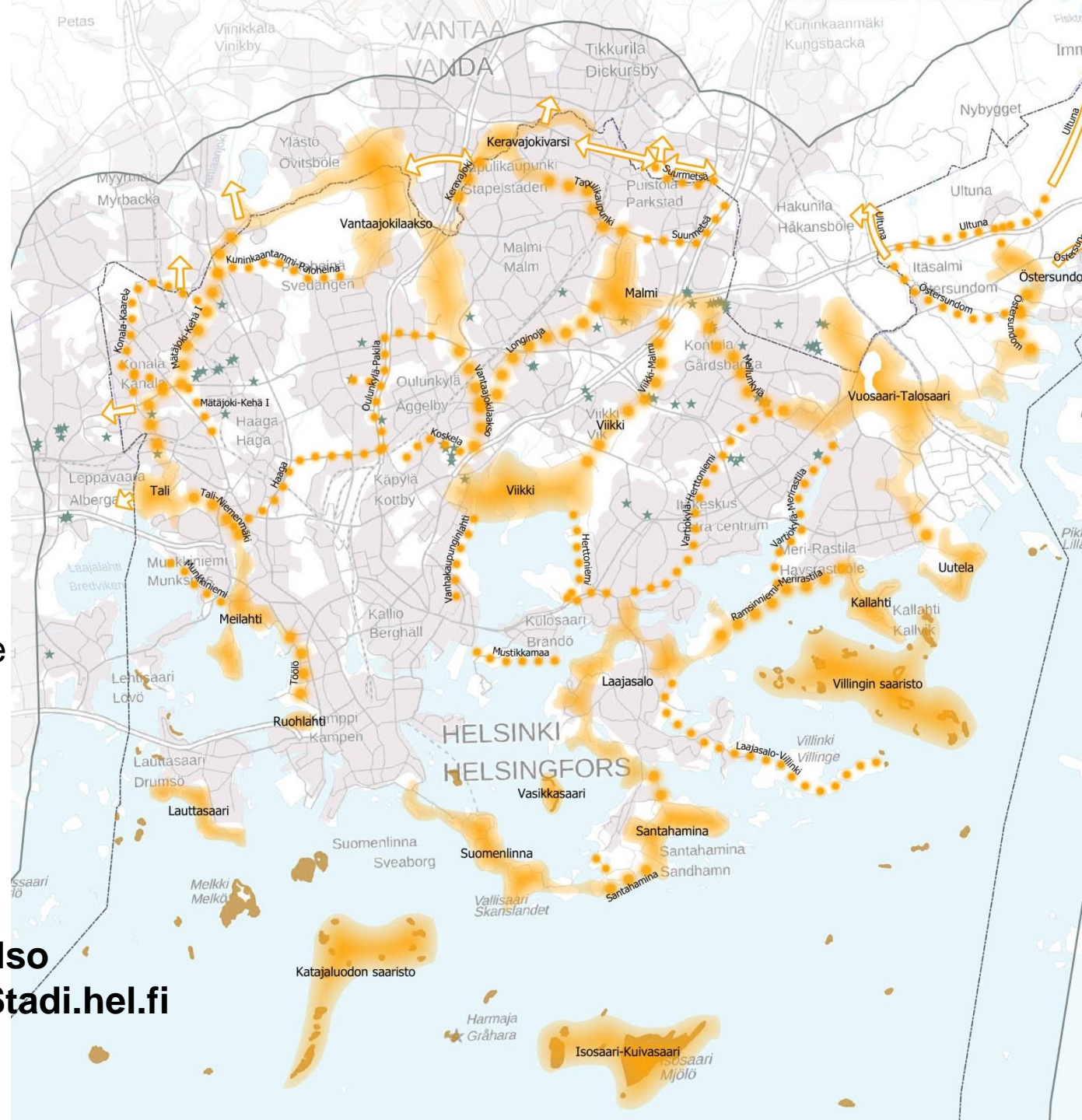
Principal connections of the forest network promote the mobility of the flying squirrel

# Meadow network

Supporting the nationwide pollinator strategy to prevent biodiversity loss



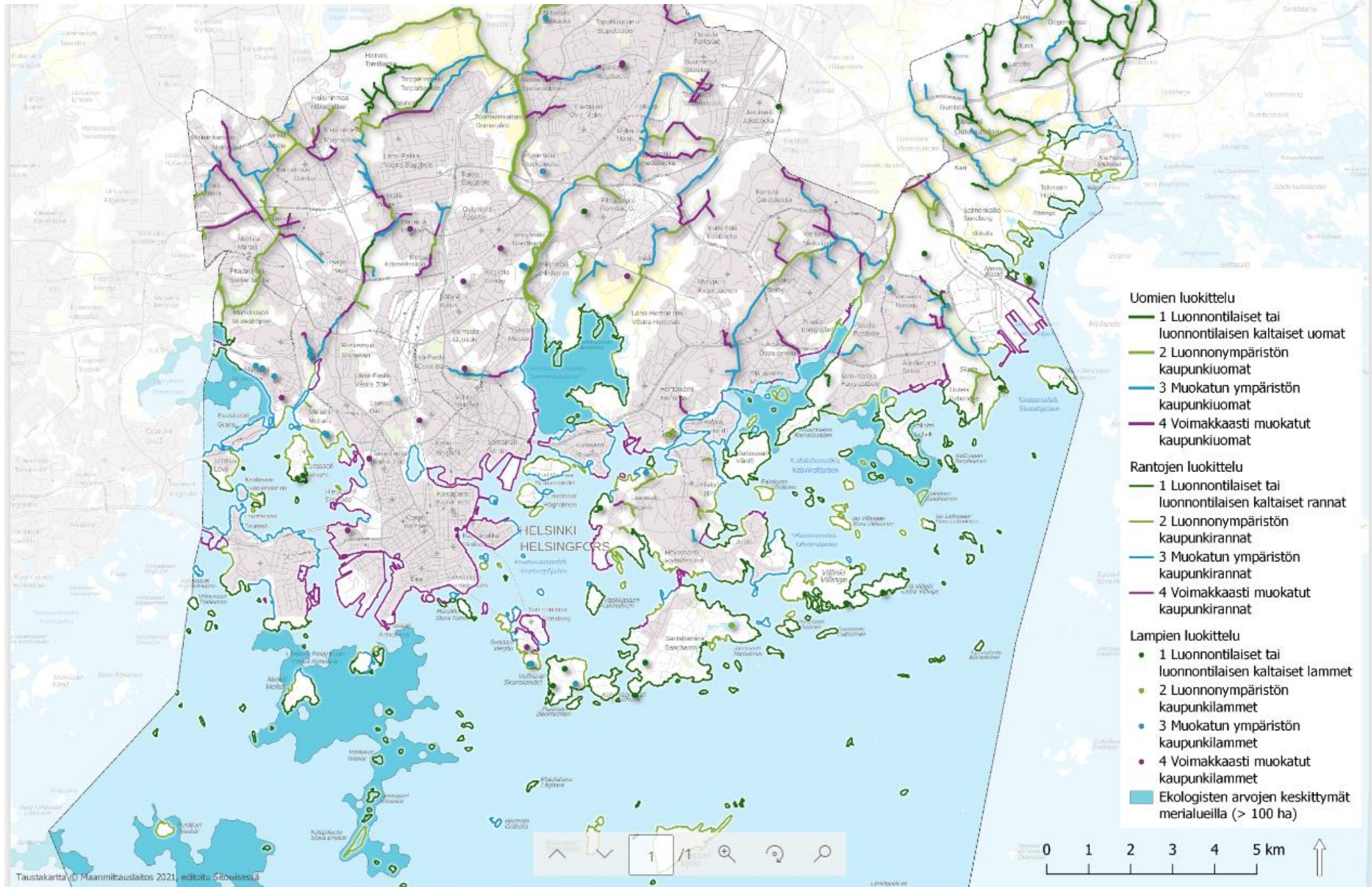
Meadow in Arabianranta and beehives in Malminkartano Apple garden



See also  
[OmaStadi.hel.fi](https://oma.stadi.hel.fi)



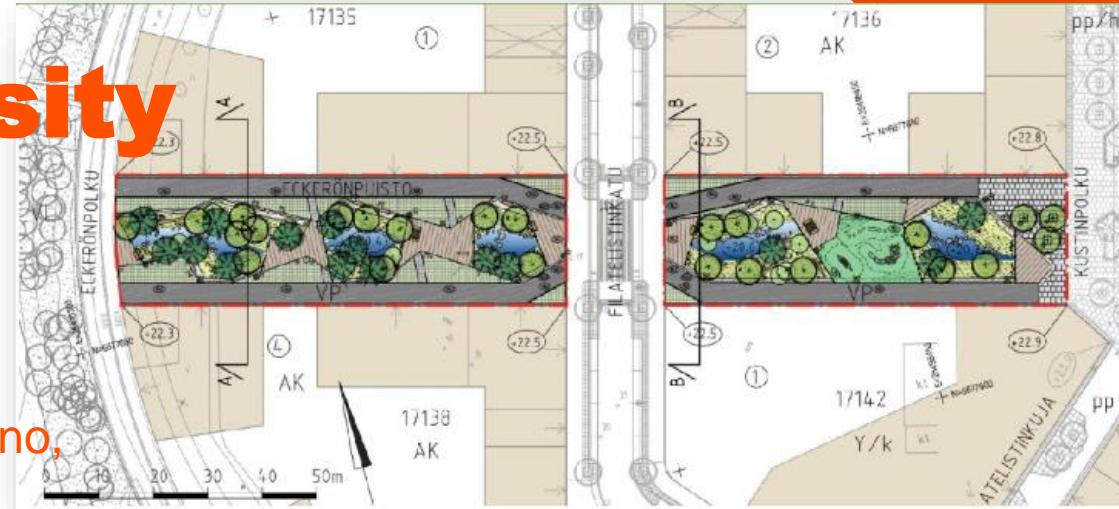
# The blue network



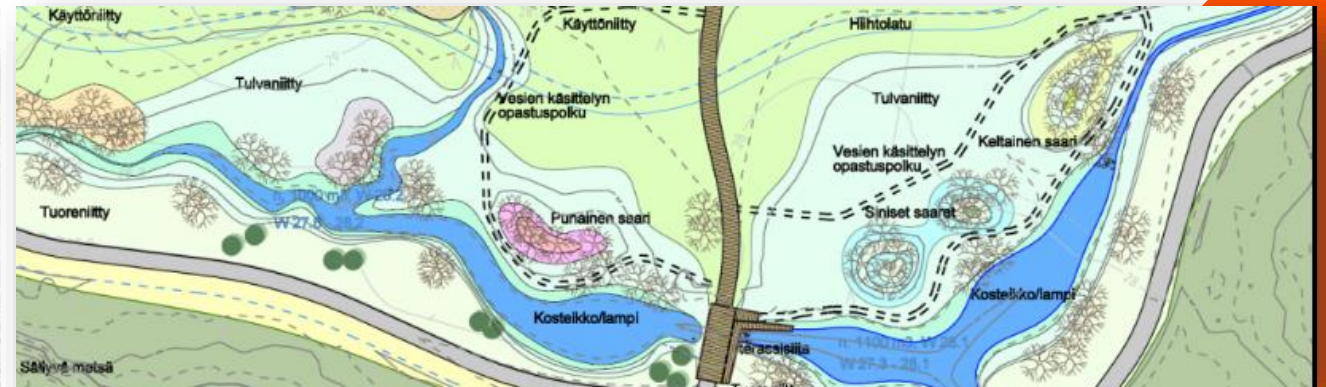
Helsinki

# Climate adaptation meets mitigation meets biodiversity

- Stormwater program 2018 - implementation
- Biodiversity program 2021 - implementation
- Stormwater plans for catchment areas
- Education for planners
- Pilot projects and monitoring for best practices; Malminkartano, Vartiosaari, Kuninkaantammi new housing area etc.
- Green factor tool is used in every city plan to assess and increase green infra in the urban context



Pasila; Eteläinen Postipuisto; Eckerönpuisto



Kuninkaantammi streetscape bioswales and parks

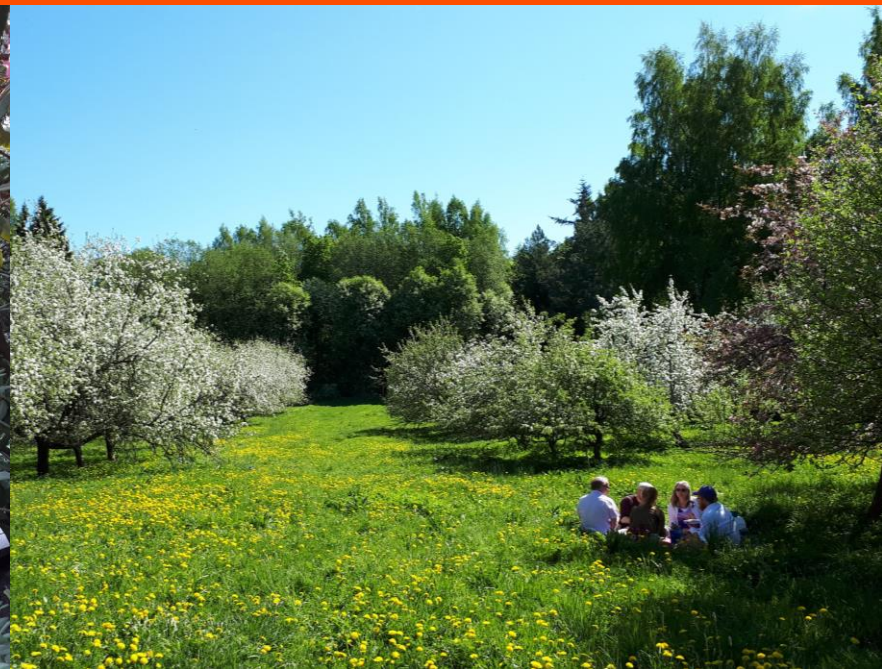
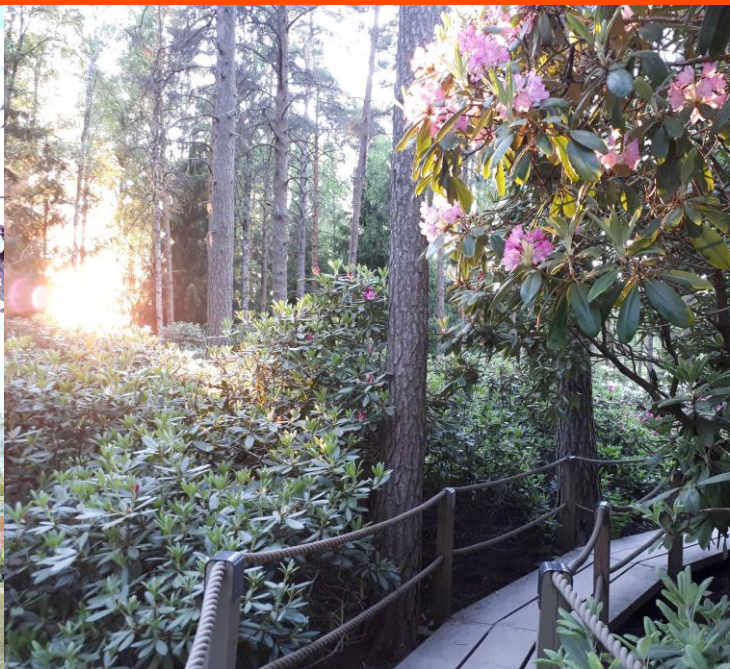
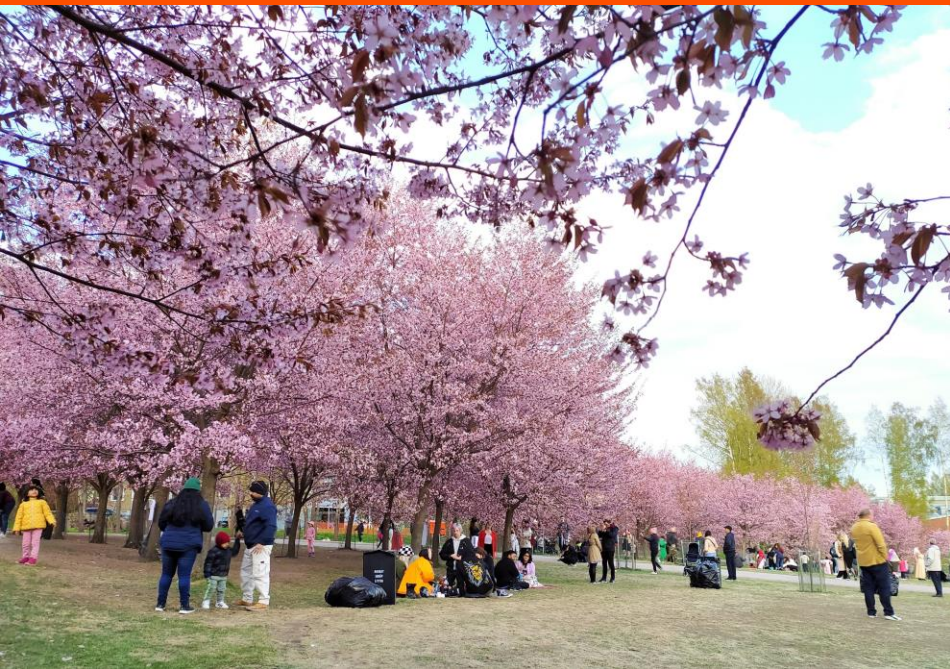
# Green health – One Health



Ulrich 1984  
Tyrväinen & Korpela 2009  
Hartig et al. 2010  
De Vries et al. 2010  
Grahn et al. 2010  
Hanski et al. 2012  
Tyrväinen et al. 2014  
Africa et al 2014, 2015  
Pasanen et al. 2018  
Dzhambov et al. 2018  
Lipponen et al. 2022

# Kiitos! Thank You!

maria.jaakkola@hel.fi



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# **Anchoring knowledge and innovation within green mega infrastructure**

**Stig Rømer Winther**

*Managing Director of Femern Belt Development and  
Lead of Fehmarn Innovation*





Fehmarn Innovation Link

# Anchoring knowledge and innovation within green mega infrastructure

Stig Rømer Winther

Managing Director, Femern Belt Development  
Lead & coordinator of Fehmarn Innovation Link

June 8th - European Green Week - Skills for Green Infrastructure



# Fehmarn Innovation Link

## PURPOSE

Fehmarn Innovation Link is an international knowledge and learning center where SMEs, cluster organisations, researchers, educational institutions and business developers collaborate with large companies within the mega-infrastructure sector as well as the energy and climate sector.



## VISION

To make Denmark and the Fehmarn region world leaders in all aspects of green mega-infrastructure projects in 2028.

## PARTNERS

Technical University of Denmark  
Roskilde University College  
Zealand  
Femern Belt Development  
We Build Denmark  
Odense Robotics  
Erhvervshus Sjælland  
Danish Technological Institute  
Vocational Education Schools



## ACTIVITIES

Research and innovation, education, internships, network and innovation boards, collaborations and partnerships, incubator for startups, presentation of solutions etc.





Location



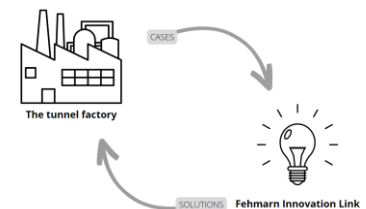
# The tunnel factory & students

## The interaction between the tunnel factory and students

- Letter of cooperation
- Case catalogue
- Courses
- Field trips
- Bachelor and master students
- PhD

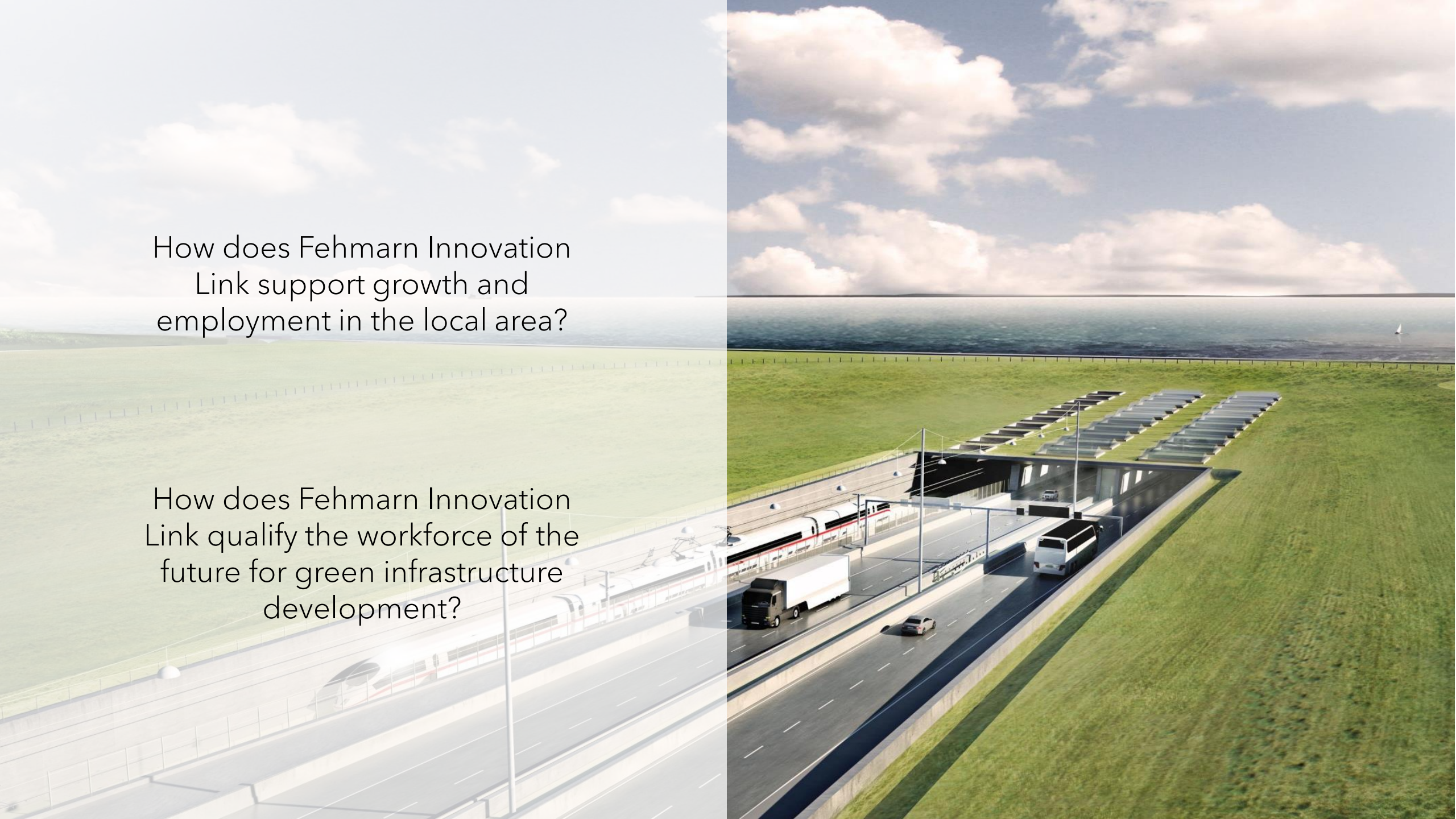
## Examples of green-tech cases for infrastructure

- Development of technical water for construction purposes
- Deployment of autonomous robotic systems on construction sites
- Automated quality assurance of the rebar cages
- Mega infrastructure and its impact on the surrounding area
- Autonomous underwater drones



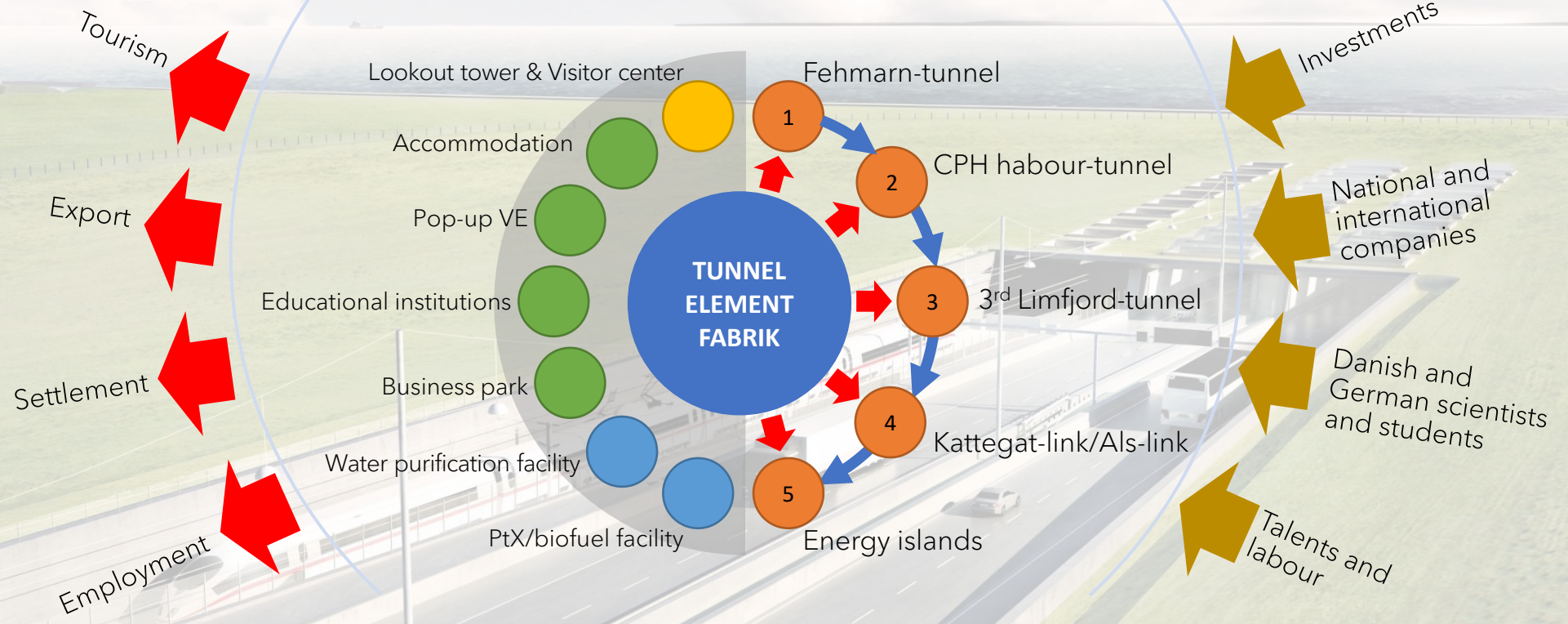
How does Fehmarn Innovation Link support growth and employment in the local area?


How does Fehmarn Innovation Link qualify the workforce of the future for green infrastructure development?



The Fehmarn-tunnel creates ...

The Fehmarn-tunnel attracts ...



 Fehmarn Innovation Link for researchers, educational institutions and business developers

---

# THANK YOU



Vestre Kaj 68, 4970 Rødby



+45 54 67 61 40



[www.femern.info](http://www.femern.info)



[info@femern.info](mailto:info@femern.info)



Read the newsletter Femern Belt Update

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## Ensuring a skilled workforce for the railway of the future

**Elin Kebert**

*Expert on skills supply, The Swedish Construction Federation,  
board member of Järnvägsscollege (Railway college)*





# Swedish Construction Federation

BYGGFÖRETAGEN





# Skills shortage

- The Swedish Construction Federation is trade organization organizing 3900 companies and a member of the Confederation of Swedish Enterprise.
- Swedish construction sector has expanded and now employs over 350.000 people.
- Expansion of education system has not met needs and created a skills deficit.
- Skills shortage in all parts of construction industry including infrastructure and railway.
- Swedish HVET provides much needed skills to the sector, through up-skilling and re-skilling.



BYGGFÖRETAGEN



# JÄRNVÄGS COLLEGE

**För en banbrytande framtid**

An aerial photograph of a town and surrounding fields, taken during the golden hour of sunset. The scene is bathed in a warm, orange glow. A road curves through the landscape, and various buildings and green spaces are visible. The overall atmosphere is peaceful and scenic.

# BYGGFÖRETAGEN

**Elin Kebert, policy maker & expert at  
Swedish Construction Federation  
[elin.kebert@byggforetagen.se](mailto:elin.kebert@byggforetagen.se)**

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## Panel discussion and Q&A



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## Concluding remarks

**Louise Coffineau**

*Senior Policy Advisor, Environment and Climate, EUROCITIES*



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# Thank you!

