

INAR

INSTITUTE FOR ATMOSPHERIC AND
EARTH SYSTEM RESEARCH



UNIVERSITY OF HELSINKI

Exploring collaborative efforts between
researchers and the city of Helsinki to
enhance the climate resilience of cities

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Strong support for collaboration between academia and cities within Helsinki metropolitan region

- Helsinki Institute of Sustainability Science since 2018
 - Enhances sustainability transition through 5 research themes: Consumption and Production, Global South, Arctic, Urban and Theory and Methodology
- Helsinki Institute of Urban and Regional Studies since 2018
 - Multi-disciplinary research unit cultivating high-quality research and education, and improve societal impact of research
- Urban academy 2019-2024
 - Multidisciplinary research, teaching and societal impact unit in partnership of 5 organizations: University of Helsinki, Aalto University, Cities of Helsinki, Espoo and Vantaa

HELSUS
HELSINKI INSTITUTE OF SUSTAINABILITY SCIENCE

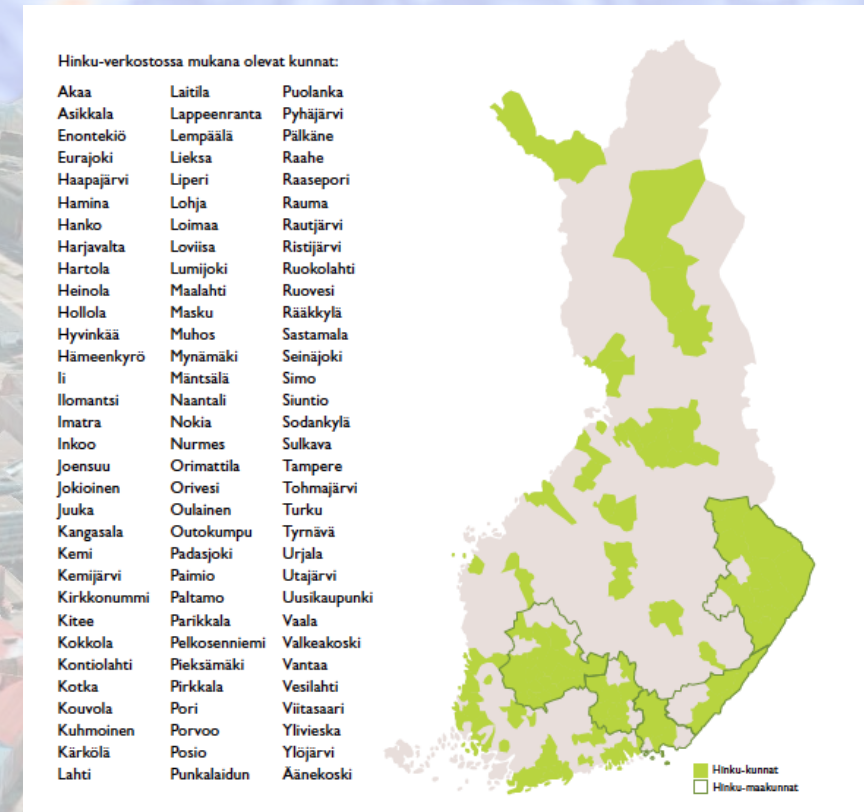
URBARIA
HELSINKI INSTITUTE OF URBAN REGIONAL STUDIES

K A U P
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Urban sustainability and climate adaptation and mitigation

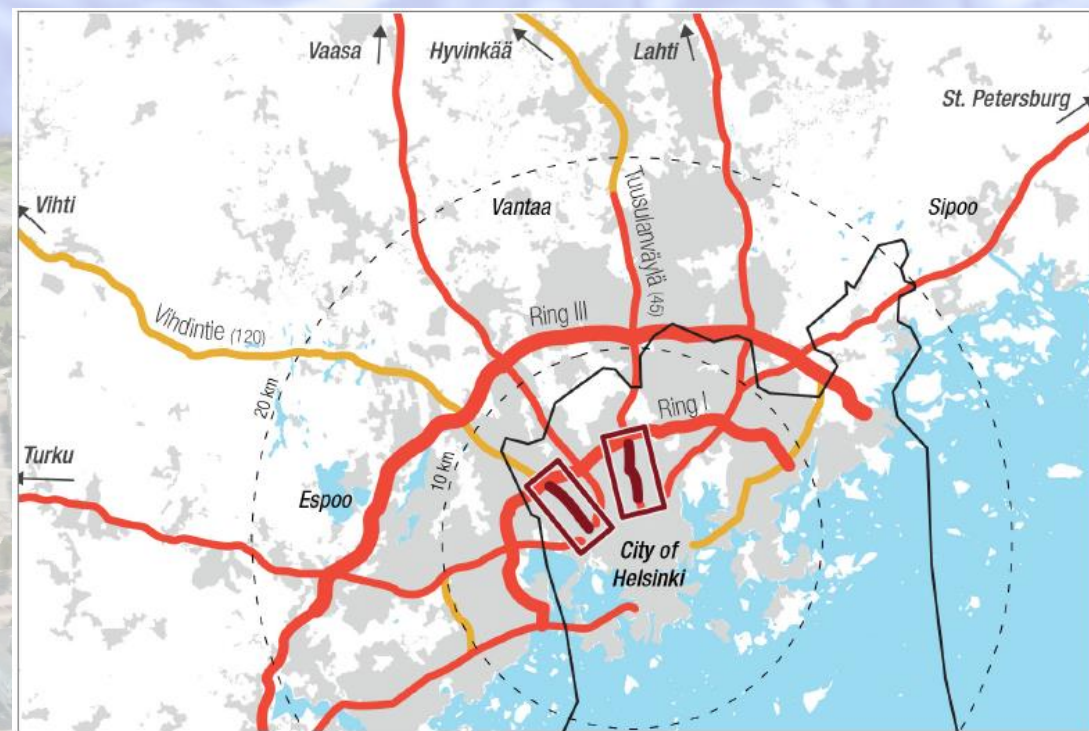
- Cities of Helsinki and Espoo aim to be carbon neutral by 2030, Vantaa by 2045
- Helsinki has Biodiversity Action plan for 2021-2028
- Towards Carbon Neutral Municipalities (Hinku) network brings together municipalities, businesses, citizens and experts to create solutions to reduce greenhouse gas emissions
- 96 municipalities and five regions, covering around 44 % of Finland's population.





City of Helsinki at the pressure of urbanization

- To meet the climate and sustainability aims and its growing population, City of Helsinki plans to convert some of its access roads to city boulevards
- Helsinki interested on how to provide healthy and comfortable environment for people living and accessing the new neighbourhoods



Paul Lecroart and Théo Bendahan / Helsinki. City Boulevards Strategy and Projects / L'Institut Paris Region, December 2020.



How traffic in a boulevards should be planned?

- Research council of Finland funded CousCous-project
- Topic planned together with the city of Helsinki
- Combines machine learning, building resolving air quality modelling and socio-economic data to create solutions which maximizes local air quality in an equal manner



Paul Lecroart and Théo Bendahan / Helsinki. City Boulevards Strategy and Projects / L'Institut Paris Region, December 2020.

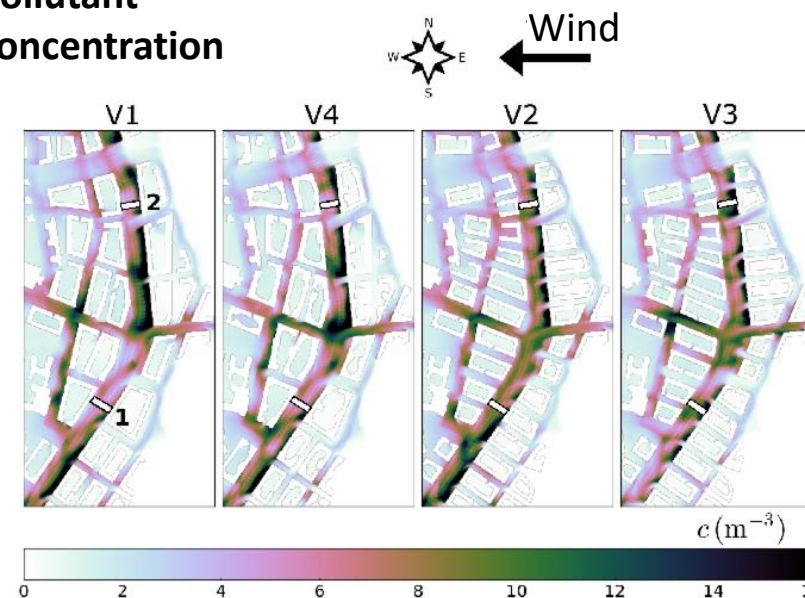


Modification of street level concentrations with different building block layouts



Improvement up to 10%

Pollutant concentration



Kurppa et al. 2018, Atmosphere



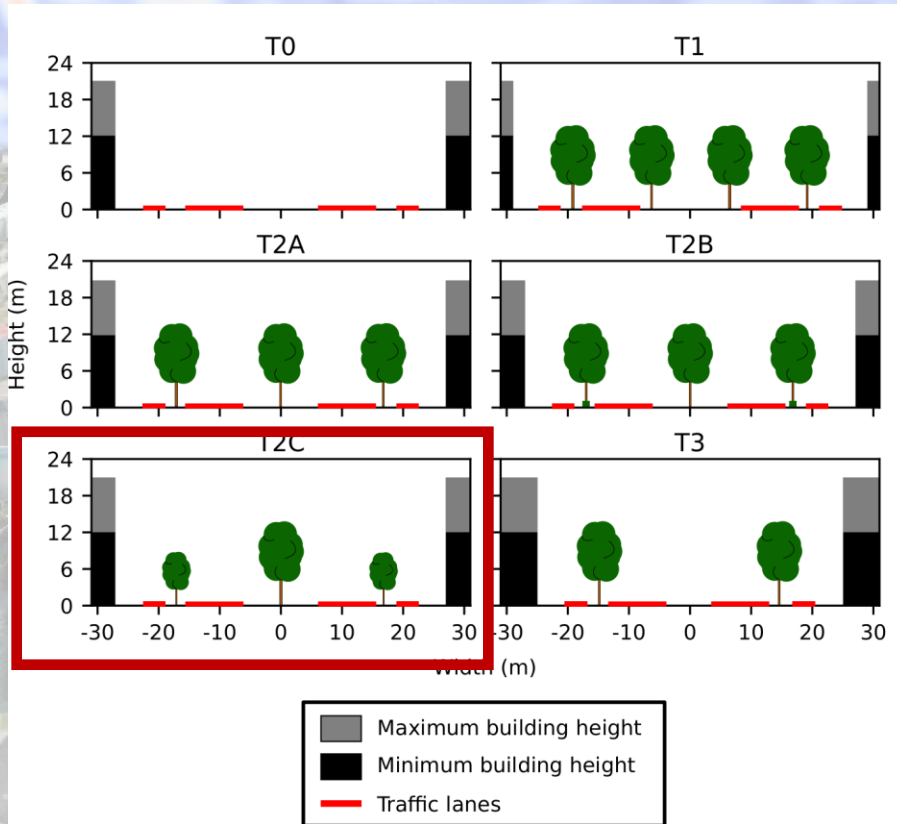
Street vegetation has crucial role to enhance liveability of the boulevards



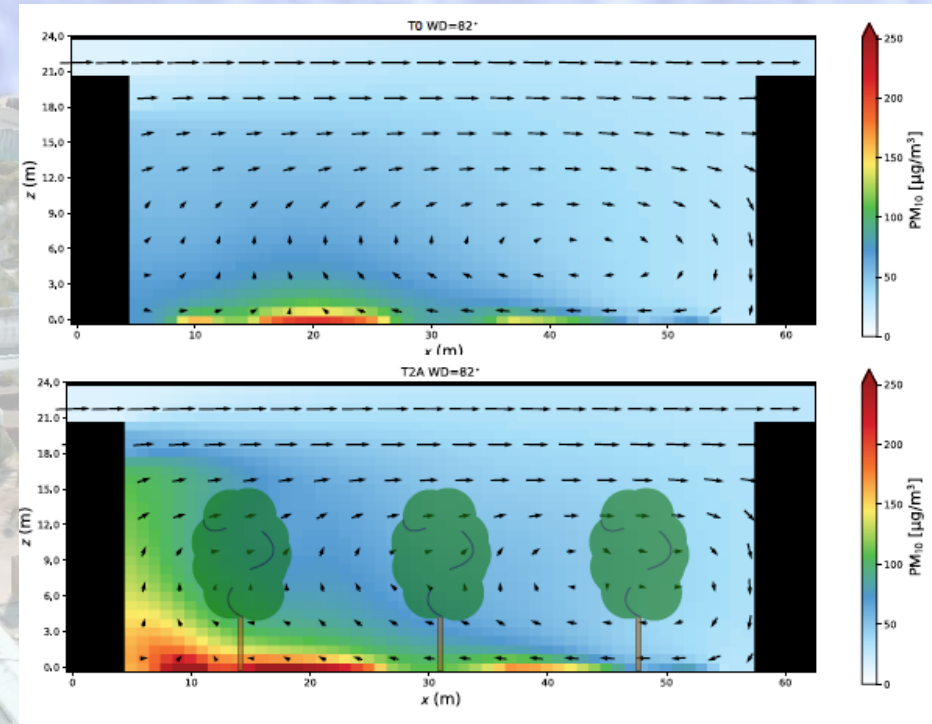
Paul Lecroart and Théo Bendahan /
Helsinki. City Boulevards Strategy and
Projects / L'Institut Paris Region,
December 2020.



Impact of street trees on local air quality depends on their location



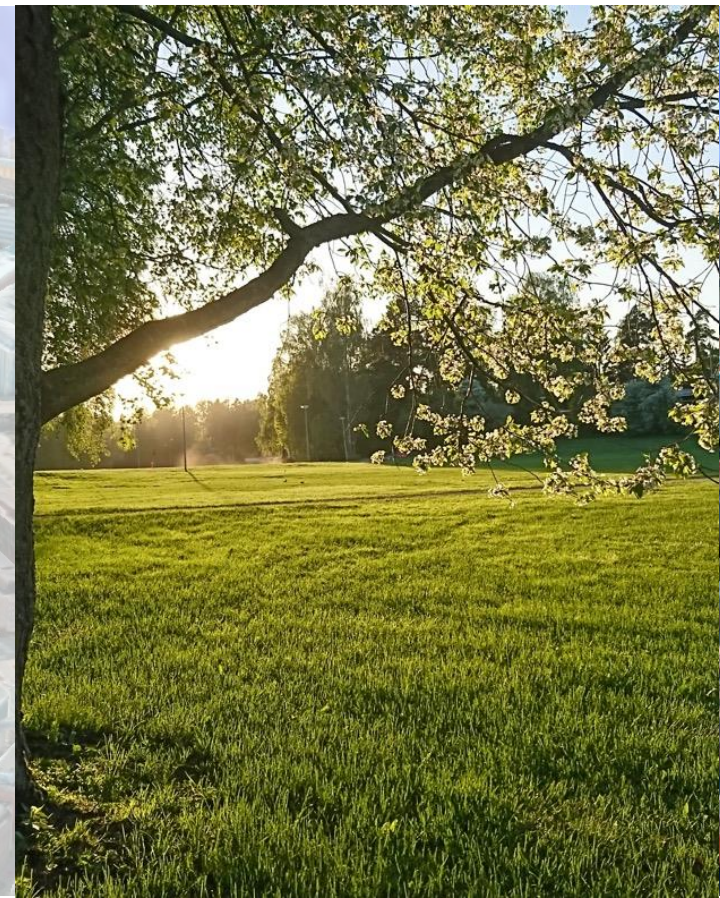
Karttunen et al. 2019, Atmos. Env.,

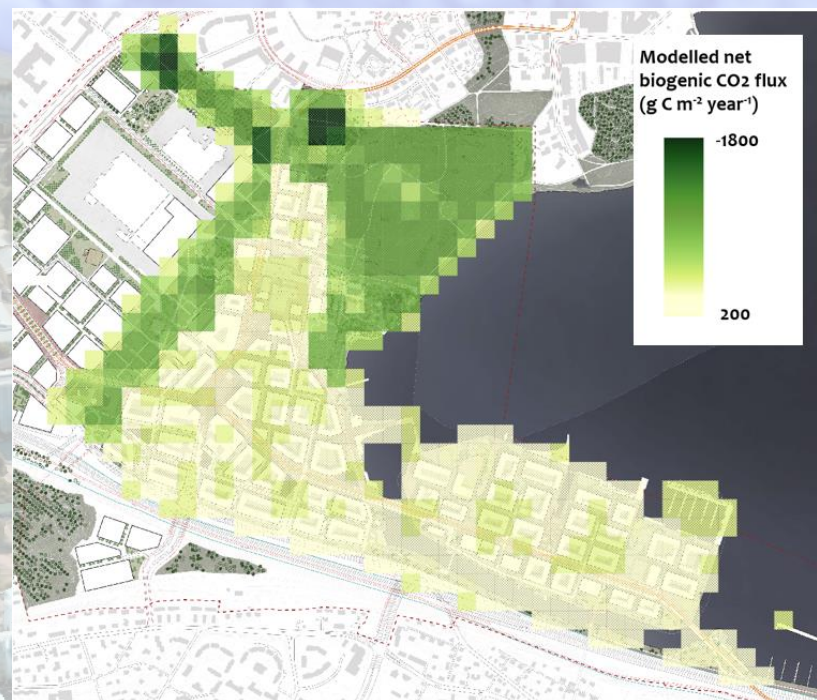




Urban nature has a critical role in climate action and biodiversity plans

- © Strategic Research Council funded CO-CARBON project
- © Purpose to quantify urban carbon sequestration and storage, find the most effective planning, construction and management practices for carbon-smart UGI
- © Engage stakeholders in policy and decision making of carbon-smart UGI
- © In collaboration with multiple cities (Helsinki, Tampere, Kerava, Espoo, Lahti, Hämeenlinna) and companies

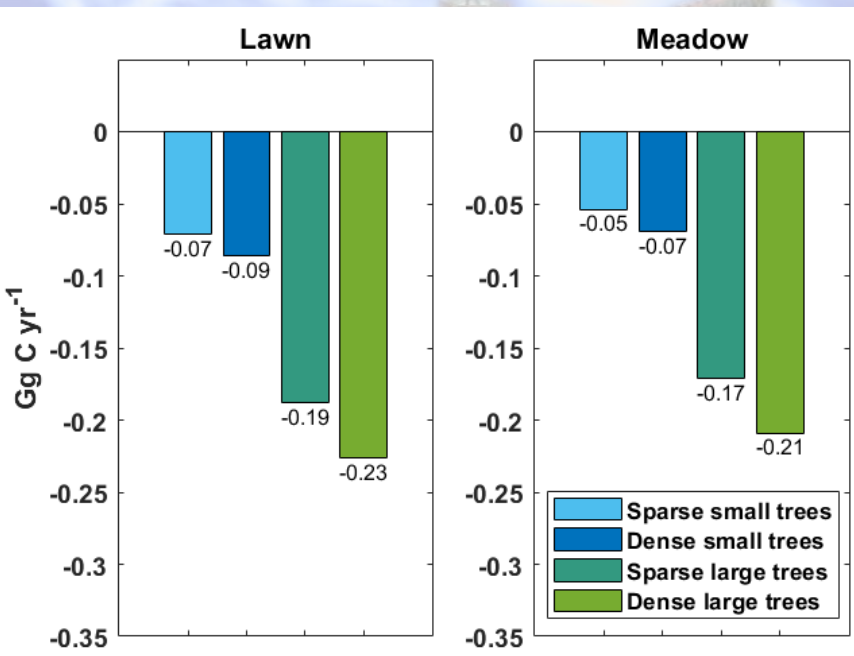




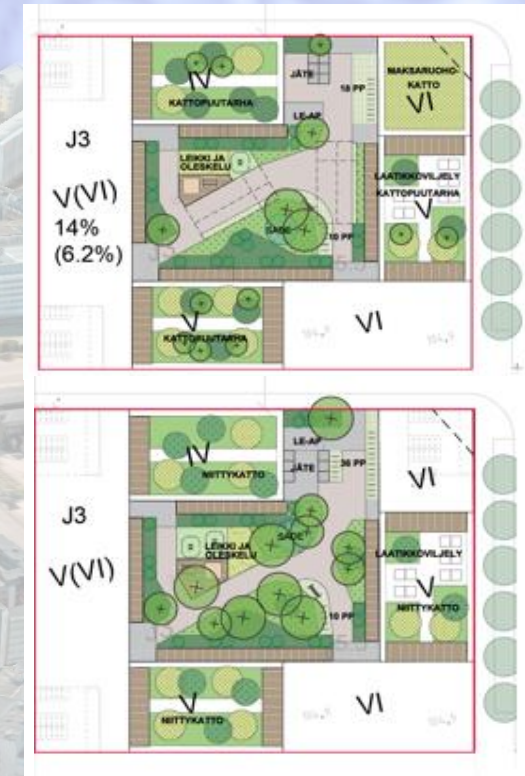
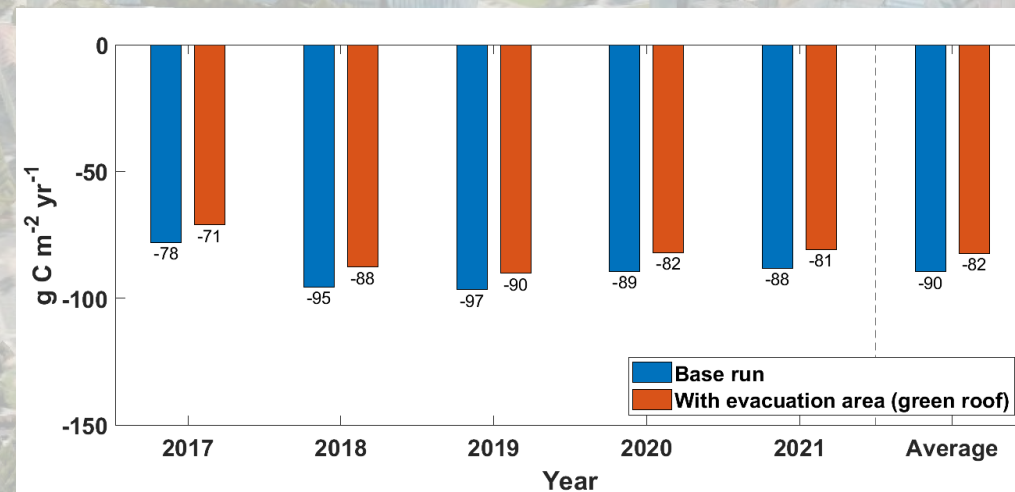


Most optimal planning means to increase annual carbon sinks in the area

Public park areas



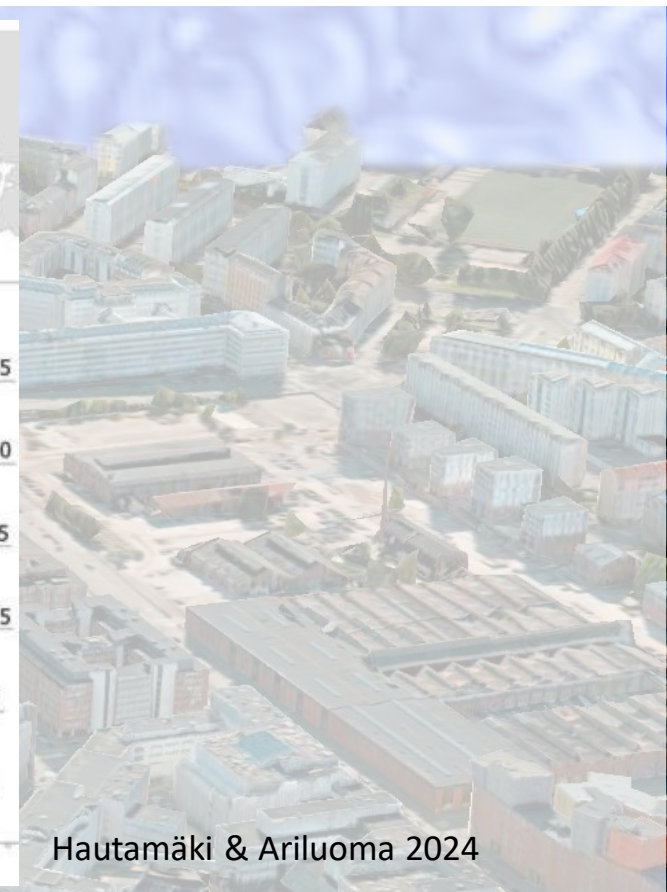
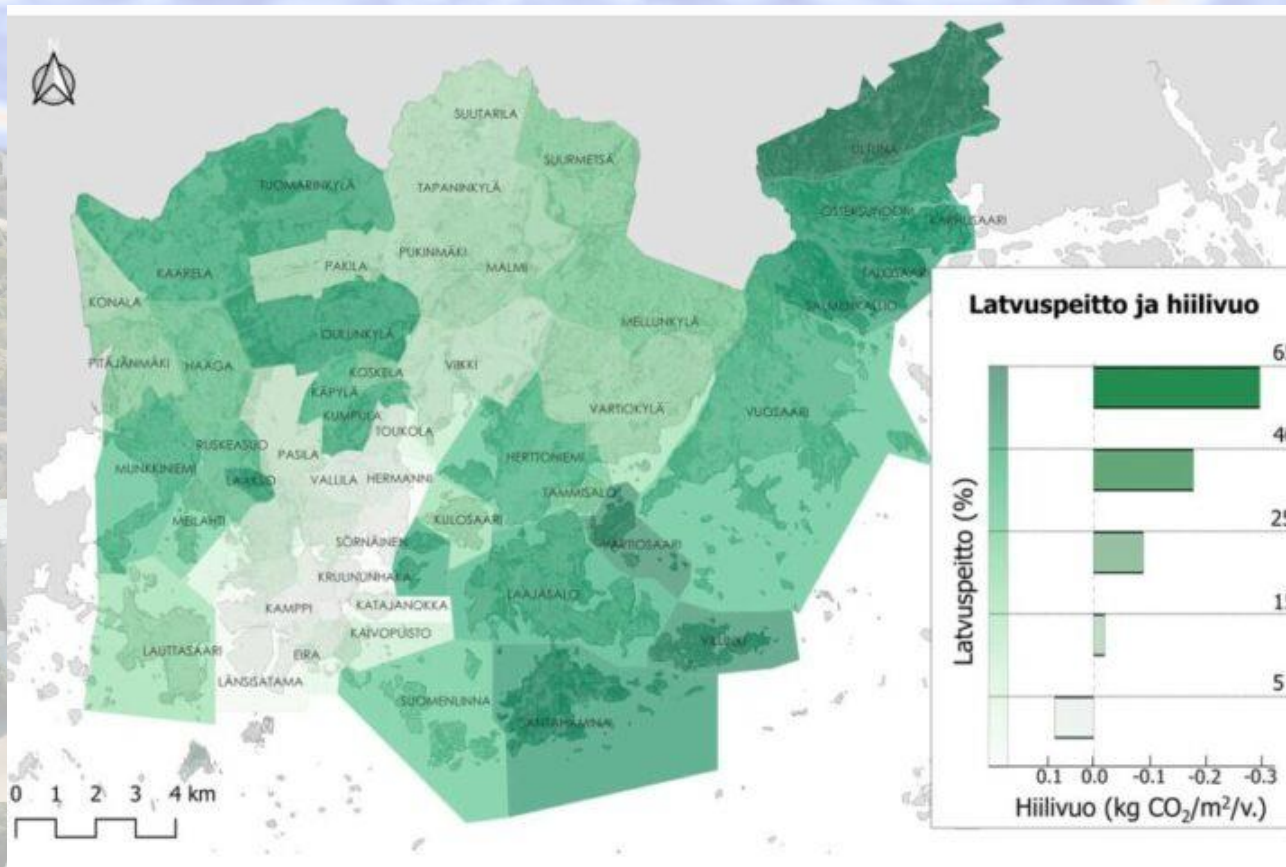
Building courtyards



@Michael Lee



Combining canopy coverage and carbon sinks



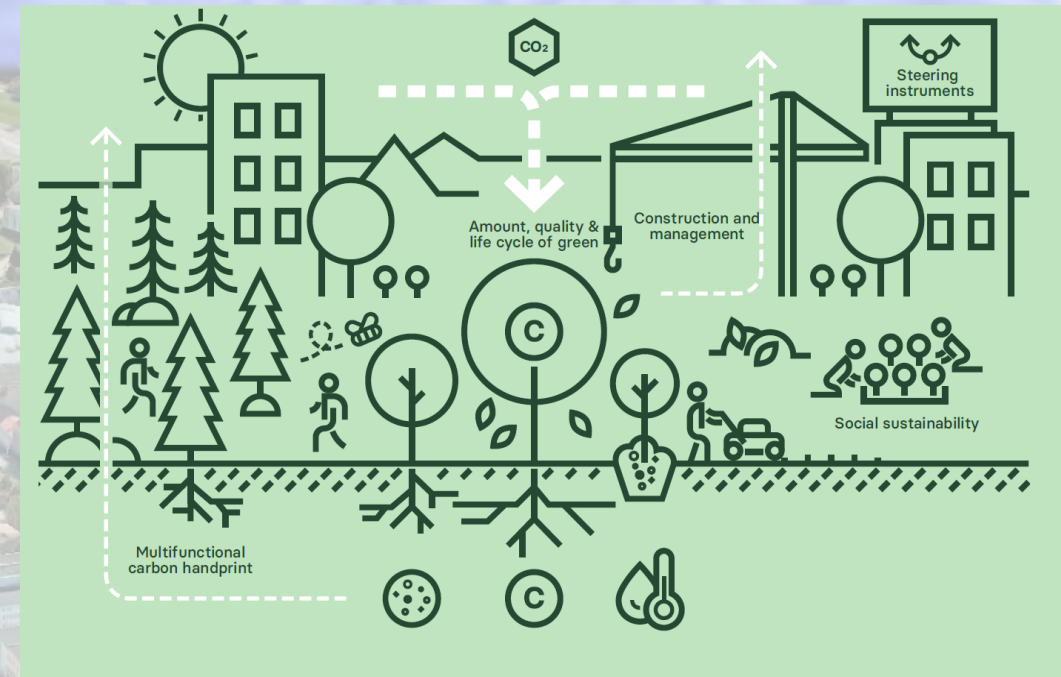
Hautamäki & Ariluoma 2024



What has been the outcome of efficient collaboration between researchers and city representatives?

- © Policy recommendations published in 2023
- © Comments asked from multiple cities
- © Regularly invited to city events

1. From carbon footprint to multifunctional carbon handprint
2. Focus on the amount, quality and life cycle of urban green
3. Carbon-smart landscape construction and management
4. Social sustainability as part of the climate solution
5. More climate benefits with more efficient steering instruments





Take home messages

- Helsinki metropolitan region universities have extensive networks to enhance collaboration between cities and academia
- City of Helsinki among other cities are eager on implementing research based knowledge into practise to support the ambitious climate and sustainability targets
- Meteorological research has multiple means on supporting the cities in meeting these targets
- Requires close collaboration and identification of the research questions together with researchers and city representatives



Thank you!

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<https://cocarbon.fi/en/>

References

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