



Aalto University
School of Arts, Design
and Architecture

Lectures series on open space design
Seminar 5, Green Infrastructure, Urban Planning and Design:
Case study applications in metropolitan areas
February 6, 2017, Polytechnic of Milan

THE ECOSYSTEM INFRASTRUCTURE OF THE NEW MASTER PLAN OF HELSINKI

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Urbanizing Society. Beyond MALPE-coordination:
Integrative Envisioning (BeMInE)

ACADEMY OF FINLAND GRANT

BEMINE project

Research partners:

- Department of Built Environment, Aalto University School of Engineering
Institute for Sustainability, Newcastle University
- VTT Technical Research Centre of Finland Ltd
- University of Tampere School of Management
- **Department of Architecture, Aalto, University School of Arts, Design and Architecture**
- Centre for Sustainable Consumption and Production/Environmental Efficiency, Finnish Environment institute (SYKE)
- Norwegian University of Life Sciences
- Centre for Urban Resilience & Energy, University of Manchester
- Jyväskylä University
- University of Tampere School of Management,
- National MAL network
- Demos Helsinki

Research funded by the **Academy of Finland, 4.000.000 €**

Towards In-formed Planning Practice

The challenge is to understand how planning could be made more *informed* while retaining its special nature in creating visual and discourse *formations*. We shall do this by analysing in depth three formations that have proved out to be particularly problematic:

- (1) the discourse formation on ecology/sustainability**
- (2) the discourse formation on multiculturalism,**
- (3) the discourse formation on place and space.**

The sub-research project: Towards In-formed Planning Practice

The aim of the team members (PI Kimmo Lapintie with Post-doc Mina Di Marino and Doctoral candidate Hossam Hewidy) at the Department of Architecture is to produce an understanding of the following dynamics:

- (1) **Ecosystem services** (regulating, provisioning, supporting and cultural) are potentially endangered in the context of urban growth and density;
- (2) Growth of immigration challenges implicit references to a uniform culture and bio-politics;
- (3) Multi-locality of employment and housing and the increasing role of ICT in working practices, social connections, and the related space-related life-styles, including the virtual.

Scientific publications

Di Marino M. & Lapintie K. (2016) 'Exploring the concept of green infrastructure in urban landscape. Experiences from Italy, Canada and Finland'.

The article is forthcoming in the next issue of *Landscape Research*

Conference abstract submitted to AESOP, Lisbon, 11-14 July, 2017. Track no. 5 *Green infrastructures: fostering dialogue across scales and policies*

Di Marino M., Tiitu M*. & Lapintie K. 'Knowledge-based green infrastructure and ecosystem services. The cases of Helsinki Uusimaa Region and City of Järvenpää (Finland)'

* Researcher at the Finnish Environment Institute (Syke)

Paper submitted to Urbanistica

Di Marino M., Niemelä J*. & Lapintie K. 'Urban Nature for land use planning: the City of Helsinki'

* Professor of Urban Ecology, Faculty of Biological and Environmental Sciences, University of Helsinki

Refereed Conference proceedings

Di Marino M. (2016). *Ecological networks and ecosystem services in urban regions. Implementation and planning practices*. In Greenways and Landscapes in Change-Proceedings of 5th Fabos Conference on Landscape and Greenway Planning (Budapest 30 June).

In Jombach, S., Valanszki, I. Filep-Kovacs K., Fabos, J. Gy., Ryan R.L., Lindhult M.S., Kollanyi L. (Eds.), pp. 71-78. ISBN 978-963-269-547-1

International Conferences

Di Marino M. & Lapintie K. *Communicating urban growth and ecosystem services in the age of Web 2.0*. In World Planning Schools Congress 2016, Rio de Janeiro, 3-8 July 2016

Di Marino M., *Exploring the green fingers and city boulevards: the new Helsinki City Plan*. In Further Environscapes Environmental Design in Europe, Milan, Italy, 17-18 January 2017

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Background

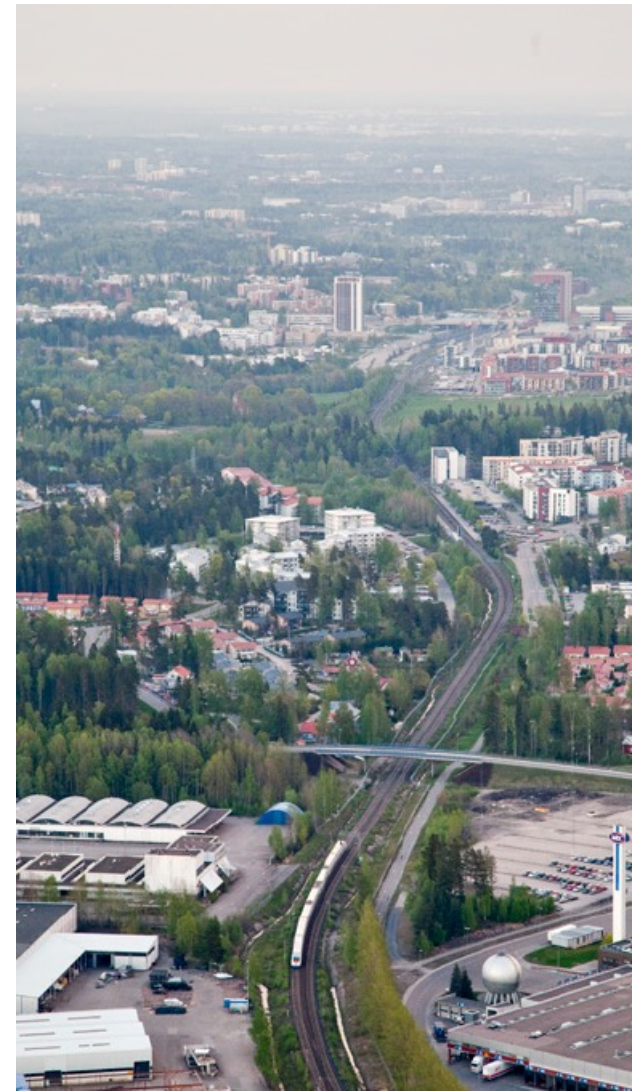
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Background

Our research focuses on the **urban growth of cities and regions**, particularly with reference to the **potential conflicts between changing land-use, Green Infrastructure (GI) and Ecosystem Services (ES)**.



Background

Recently, GI has been defined as 'an ecological and spatial concept for promoting ecosystem health and resilience, contributing to biodiversity conservation, and benefiting humans by promoting the delivery of ES' (European Environment Agency, 2014, p. 10).

Common **denominators** and **differences** between North America, Europe and UK.



Ecosystem Services concept

The **Ecosystem Services (ES)** can be categorized such as providing natural resources, **contributing to good physical environment, as well as social, cultural and educational benefits for people, wellbeing and inspiration from interaction with nature** (Millennium Ecosystem Services, 2005)

More recently **ES and Urban Ecosystem Services (UES)** have been brought to the attention of **urban and regional planners**

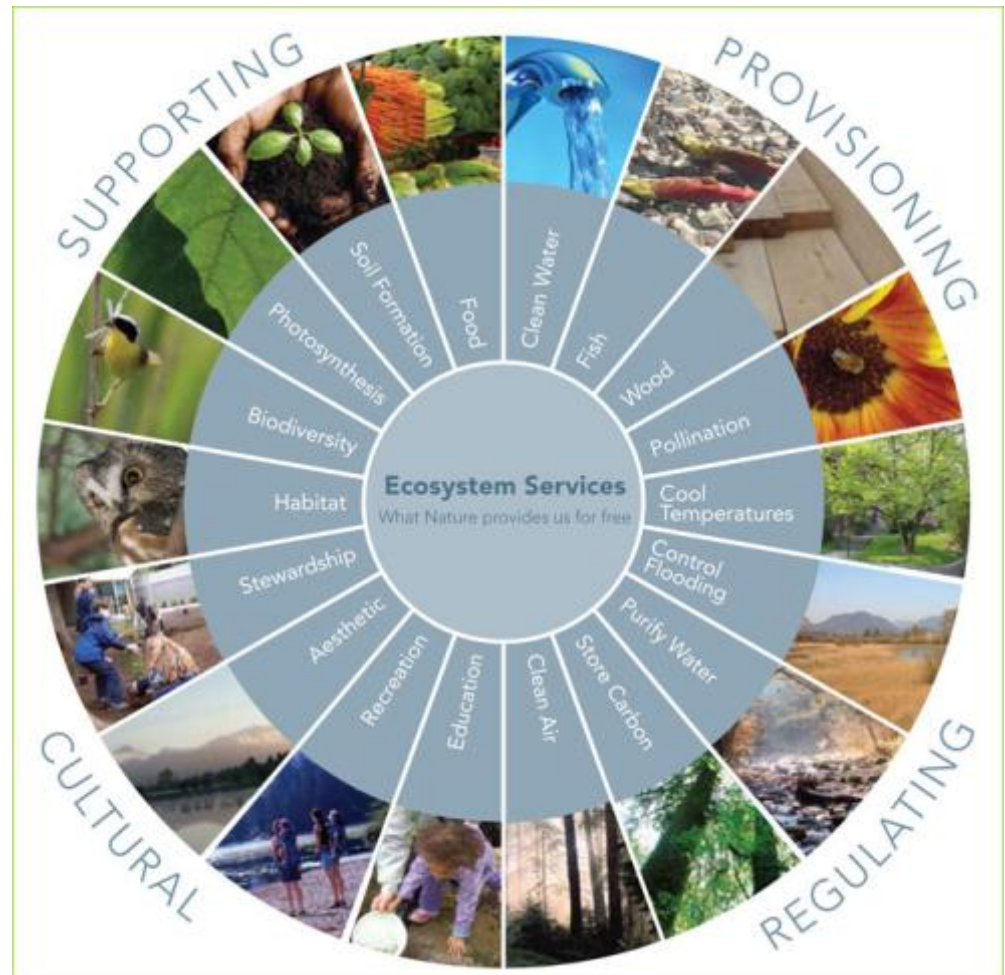


Ecosystem services, categories, benefits and values

Ecosystem Services concept

Ecosystem services are defined as services provided by the natural environment that benefit people.

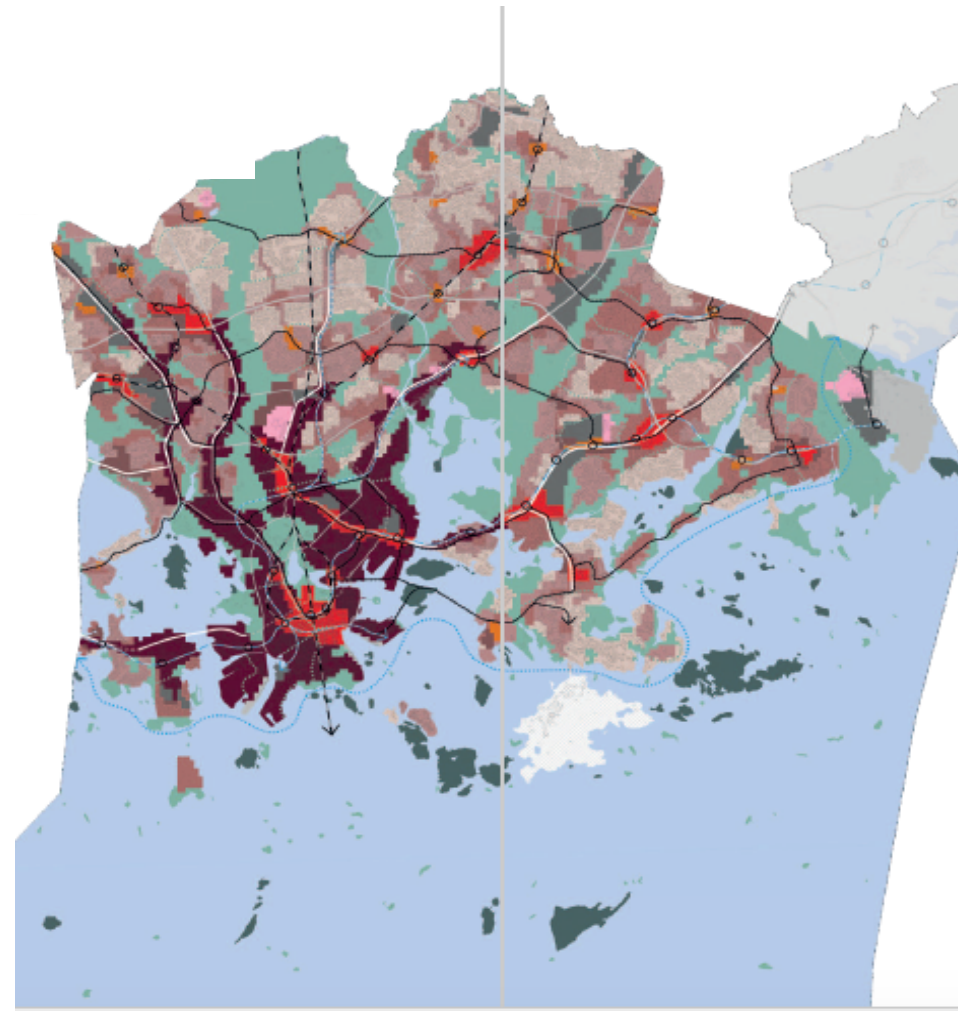
Some of these ecosystem services are well known including food, fibre and fuel provision and the cultural services that provide benefits to people through recreation and cultural appreciation of nature.



Background

In spite of the existing research carried out around the world, the value of GI and benefits from the ES are still unknown for a large group of experts and non-experts.

The knowledge gap on GI and ES concepts within the land-use planning and data gathering still seems a problem that pervade planning in cities

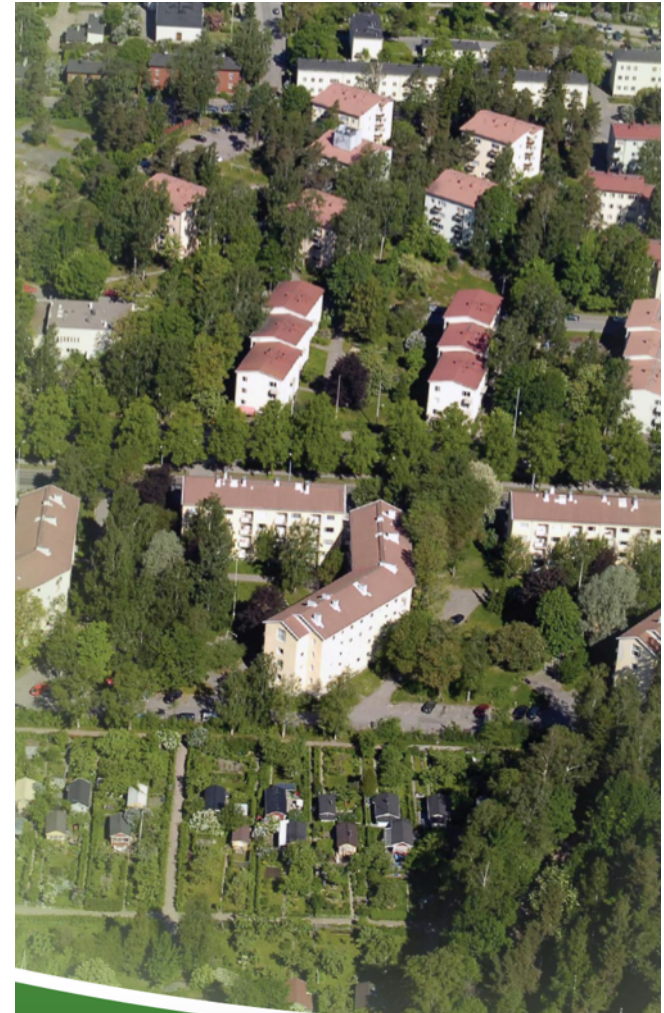


Helsinki city plan. The city plan draft, City Planning Department, 2015

Finnish context

‘Untouched’ nature is still within the urban landscape as most Finnish cities have been built close to the forest ecosystems.

The Finnish cities have not yet faced the phase of re-greening or renaturing degraded ecosystems to any large extent.



Finnish context

More recently arable lands have been converted into residential and infrastructure uses, thus reducing urban forests and other green areas.



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Research objectives and questions

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Research objectives

RO1 Exploring the **discourse and visual formations** on ecology/sustainability, in particular, on *green infrastructure and ecosystem services* (regulating, provisioning, supporting and cultural) are potentially endangered in the context of urban growth and density

RO2 Re-conceptualizing the notions of ES and GI by focusing on the knowledge gap on GI and ES concepts within the land-use planning

RO3 Exploring the knowledge gap on data gathering

RO4 Exploring the knowledge gap between academics and practitioners

Research questions

RQ1 What kind of discourse formations have been formed and are forming with respect to these challenges (with all of their "discontinuity, break, threshold, or limit")? The empirical material used consists of documents and interviews, but also the workshops etc. that are organised in the main project.

RQ2 What kind of input could research bring to planning practice in order to help planners and policy makers to deal with these new challenges (what kind of strategic planning processes, what kind representations, what kind of arguments, what kind of theoretical input that has not yet found its way to the planning discourses)?

This is **done by actively developing textual and visual representations** to accommodate the mentioned need for new discursive formations.

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Research Materials and Methods

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Research Methods: Discourse Formation

It is originally from Foucault's archaeology of knowledge, but it can also be used in analysing contemporary discourses.

What we **should avoid is the supposition that new knowledge and statements are simply integrated or cumulated on top of the old ones.**

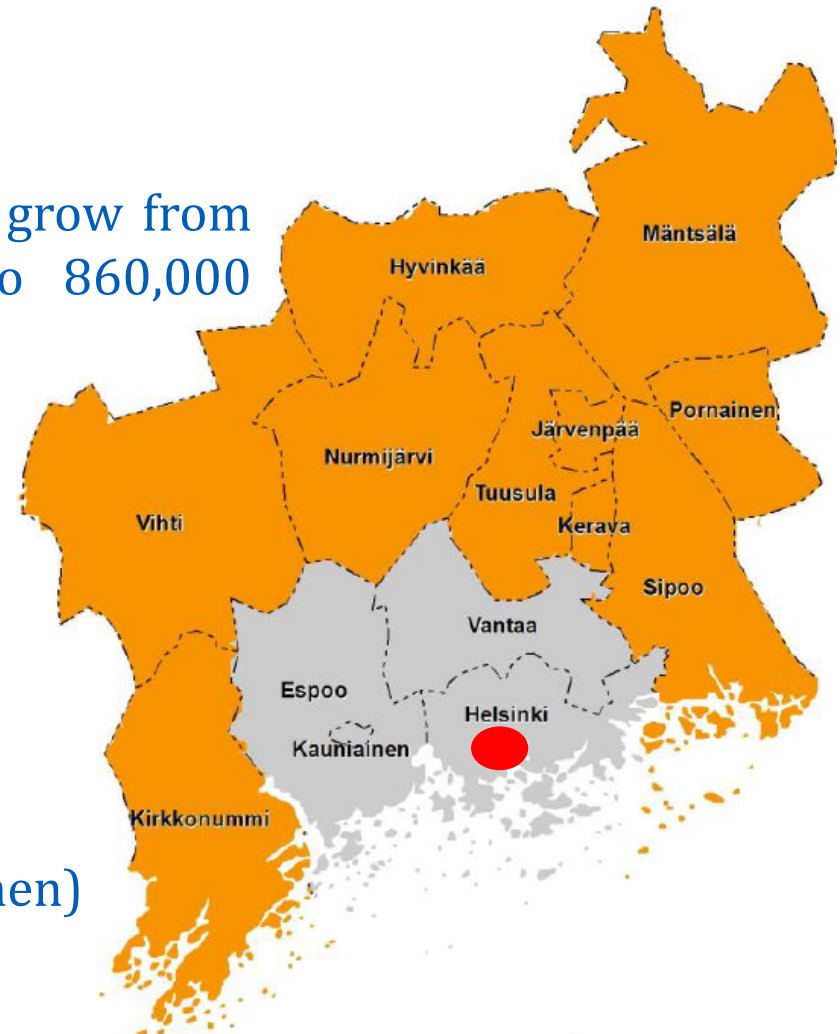
There will be a new configuration, and it is not necessarily a logical one: "I have undertaken, then, to describe the relations between statements. I have been careful to accept as valid none of the unities that would normally present themselves to anyone embarking on such a task." (The Archaeology of Knowledge, p. 34)

The case study

- **The City of Helsinki** is expecting to grow from the current 625,000 inhabitants to 860,000 inhabitants by 2050.

■ The Helsinki Uusimaa Region consists of 26 municipalities and populated by 1.6 million inhabitants. Land area 214 Km²

■ The Metropolitan Area of Helsinki (Helsinki, Espoo, Vantaa and Kauniainen)



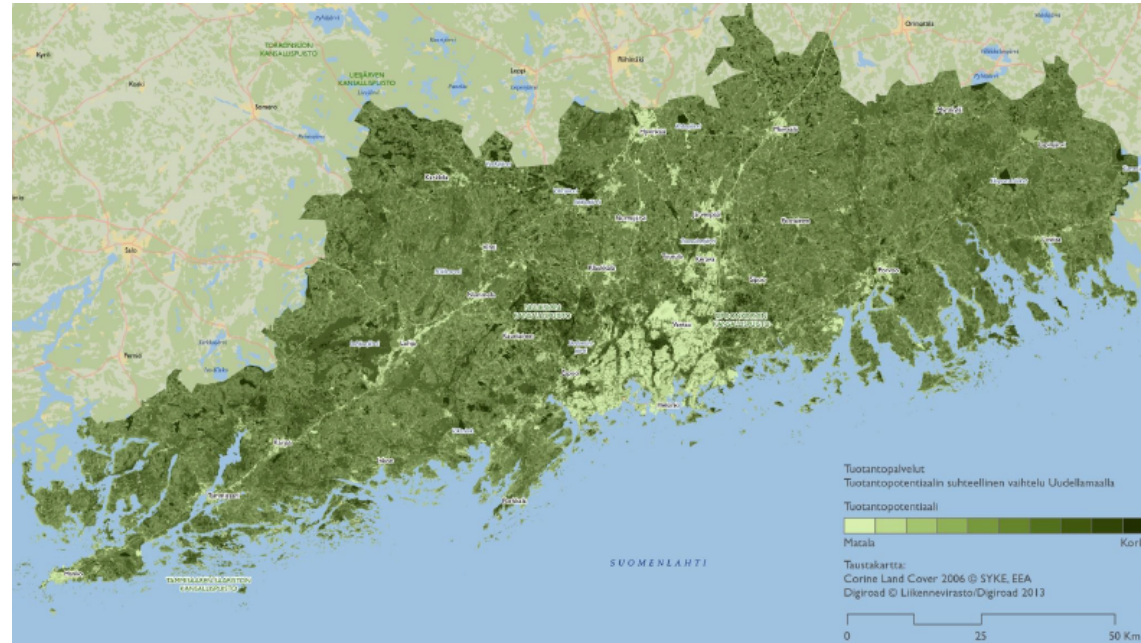
The reasons for selecting the case study

There is a growing interest in the notion of 'Ecosystem Services' and 'Green Infrastructure' among academics and planning practitioners, as well as ministerial, regional and local authorities.

Sustaining ES and green infrastructures should be one of the aims to integrate in the land use planning and at all levels of the decision-making (Ministry of the Environment, 2015).

Helsinki Uusimaa Region

The Helsinki Uusimaa Region has commissioned Syke (Finnish Environment Institute) to map the potential areas that provide ES



Uusima Regional Plan, 2014

Research materials

1. Urban Plan, Helsinki city plan draft. (City of Helsinki, 2015 a)
2. City Boulevards in Helsinki (City of Helsinki, 2015 b)
3. Helsinki City Plan, Vision 2050, Urban plan - the new Helsinki city plan (City of Helsinki, 2013)
4. Comprehensive plan of Helsinki (City of Helsinki, 2016)
5. Sustainable urban green infrastructure of Helsinki, urban ecological research report and recommendations for the Helsinki Master Plan (City of Helsinki, 2014)

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RESULTS

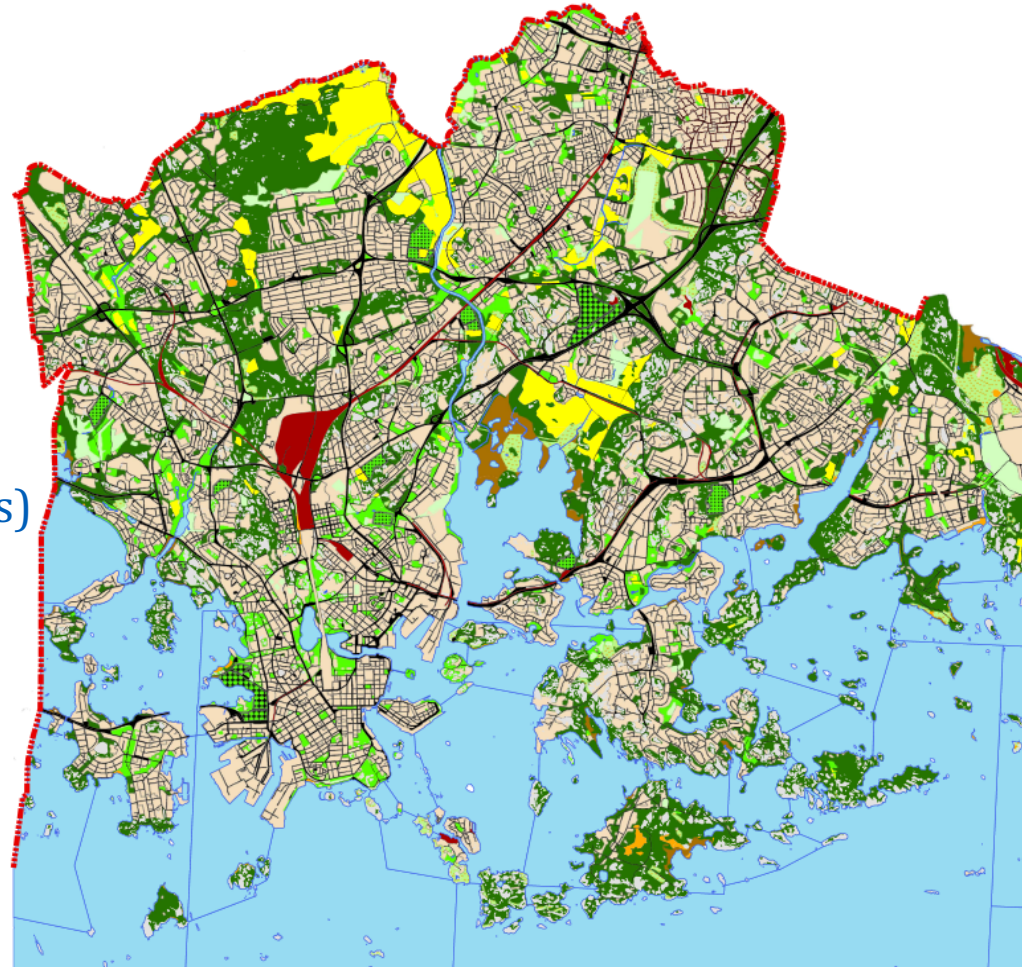
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Green areas in Helsinki

- Green areas cover 87 km² of the total municipal area
- 15 urban habitat types
- 54 urban biotopes
- Natural habitats (forests and rocky hills) represent 64% of the municipal area
- Anthropogenic habitats (e.g. meadows, ruderal) cover 17%
- Constructed parks cover 19%
- Forests represent cover 22%



Urban green areas, City of Helsinki 2014

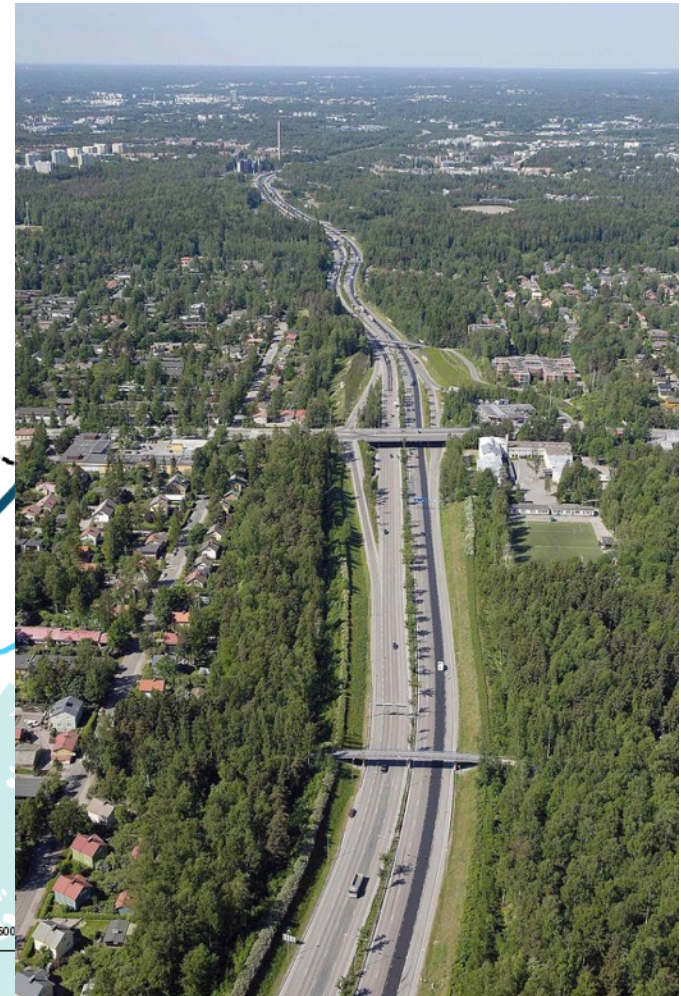
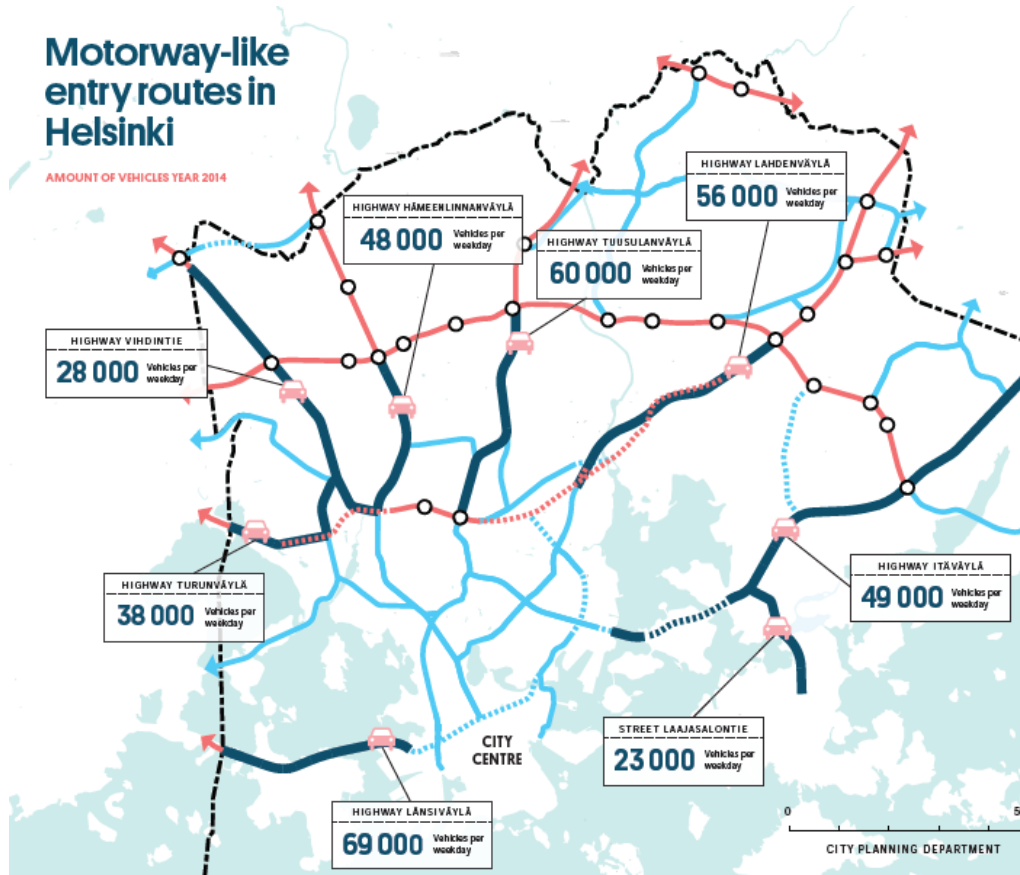
Urban Densification and infill development

The City of Helsinki has recently approved a new City plan for 2050. The City of Helsinki is expecting to grow from the current 625,000 inhabitants to 860,000 inhabitants by 2050.

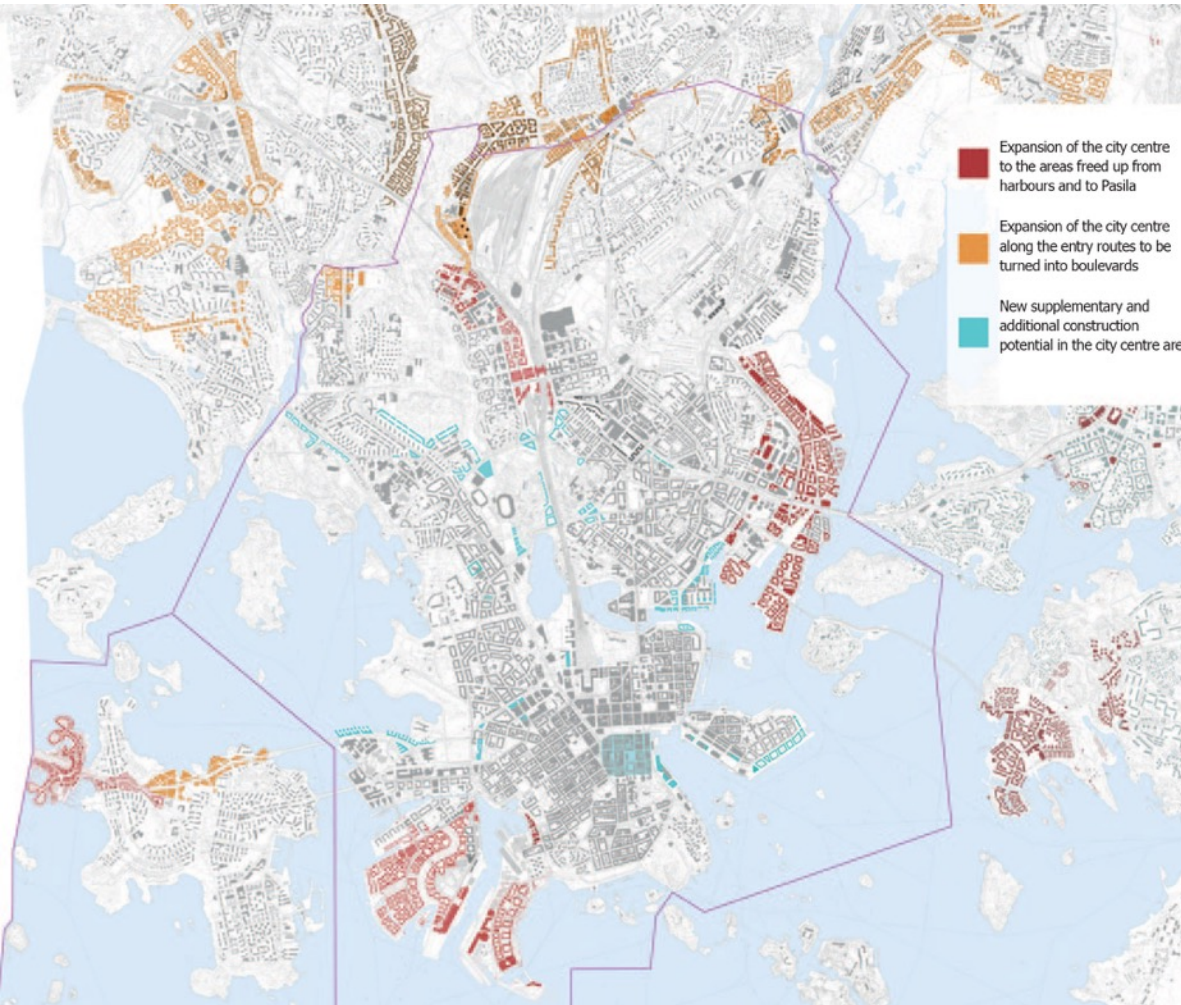
The **'boulevardisation'** aims to create a network of public rail transport as well as a gradual transformation of motorway-like entry routes in the outer suburbs into 'city boulevards' reducing traffic on the main streets.

However, the new developments will inevitably affect the green areas within the city.

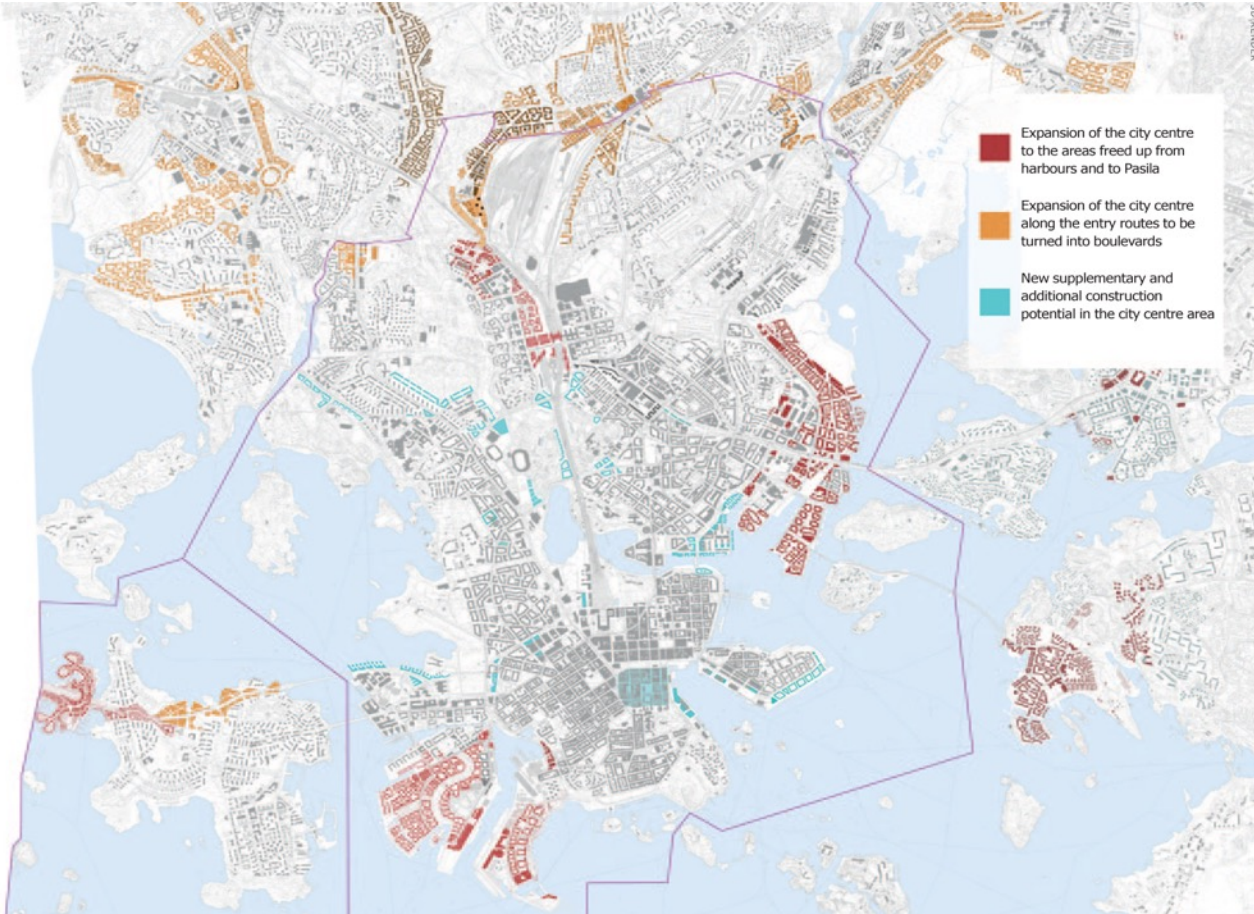
City boulevardisation



City boulevards



City boulevards



Green fingers

The green structure which has been recently included in the new comprehensive plan of Helsinki, is **idealized**.

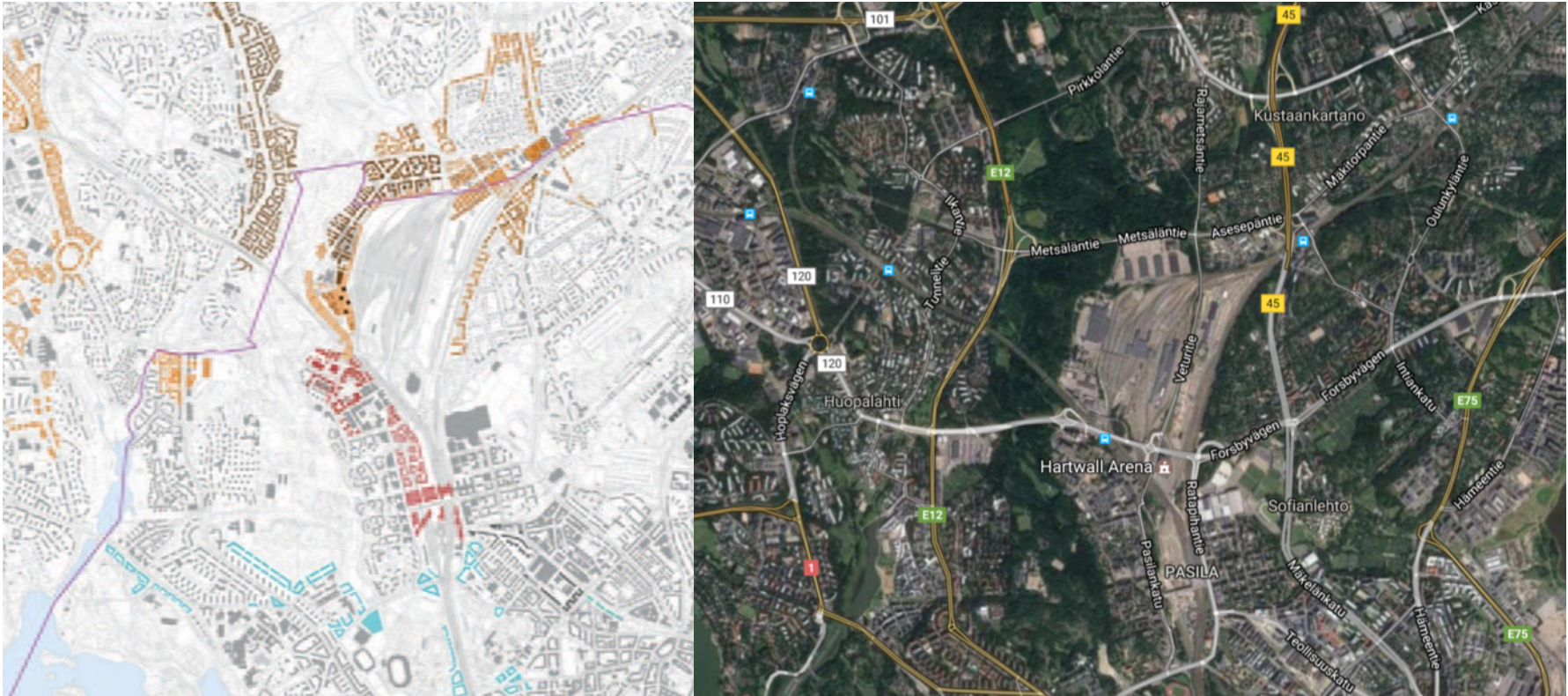
In reality, the green fingers are 'broken' in many places due to large roads cutting through them.

The new boulevards will further affect the green fingers



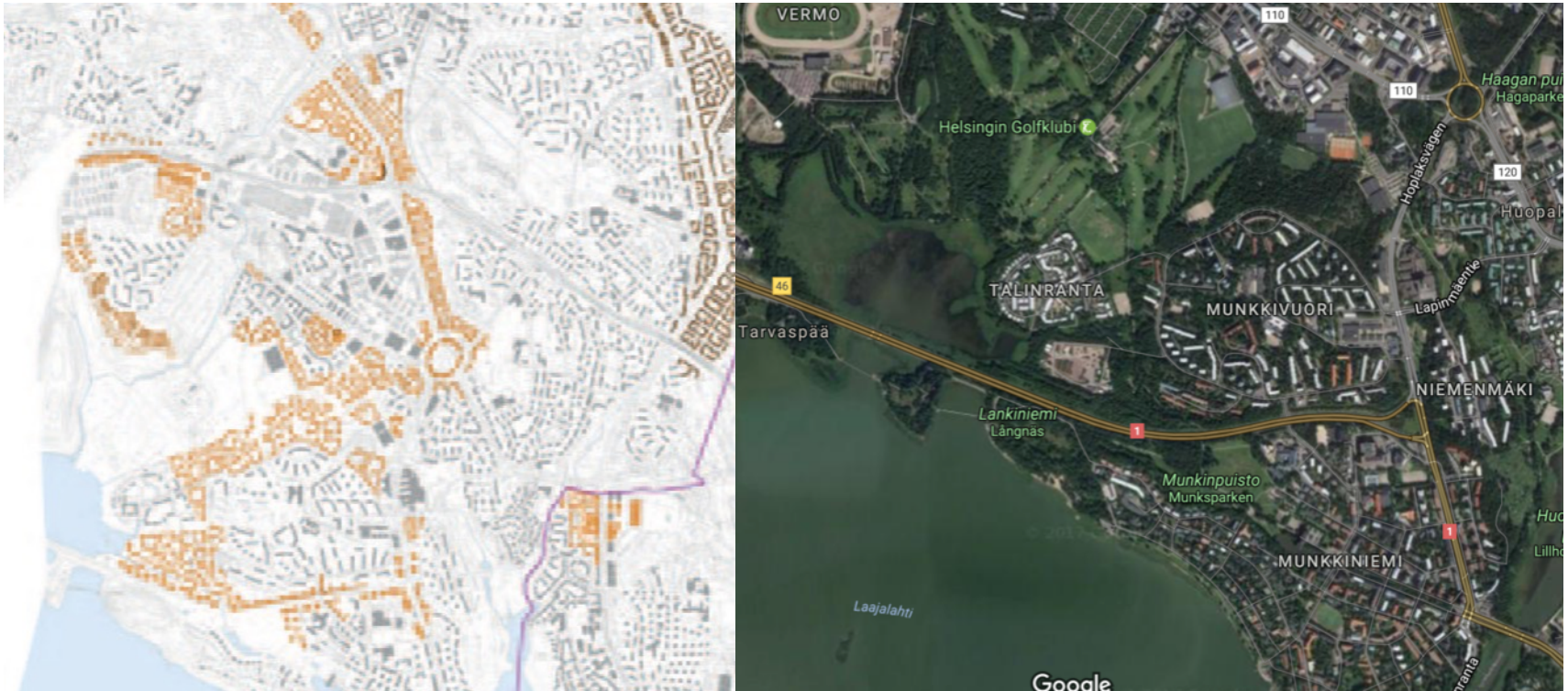
Green and blue Helsinki, 2013

City boulevardisation vs green fingers



The city boulevard of Hämeenlinnanväylä will affect the green finger of Keskuipuisto

City boulevardisation vs other green areas



City boulevard of Turunväylä and Munkkivuori neighbourhood (north of Turunväylä)

The classical confrontation



Fig. 1

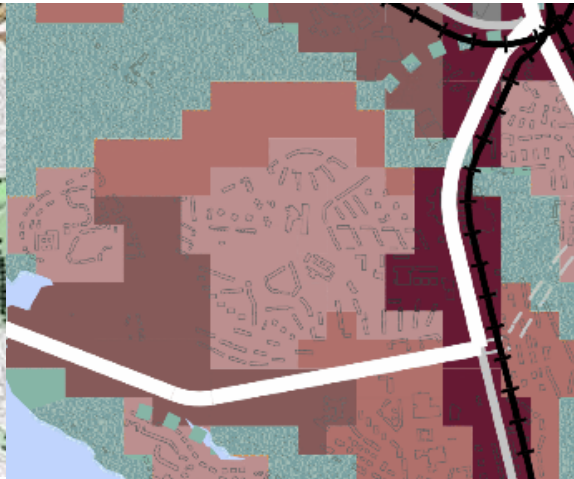


Fig. 2



Fig. 3

Detail of the Munkkivuori neighbourhood north of Turunväylä

- Fig. 1 First illustration
- Fig. 2 Draft master plan
- Fig. 3 Results of the survey of flying squirrel population in the area

Categorisation of the GI



Virkistys- ja viheralue

Aluetta kehitetään merkittävänä virkistys-, ulkoilu-, liikunta-, luonto ja kulttuurialueena, joka kytkeytyy seudulliseen viherverkostoon ja merelliseen virkistysvyöhykkeeseen.



Merellisen virkistys- ja matkailun alue

Aluetta kehitetään merkittävänä virkistys-, ulkoilu-, liikunta-, luonto- ja kulttuurialueena, joka kytkeytyy mantereen virkistys- ja viheralueisiin. Merkintä sisältää loma-asumisen ja matkailun alueita.

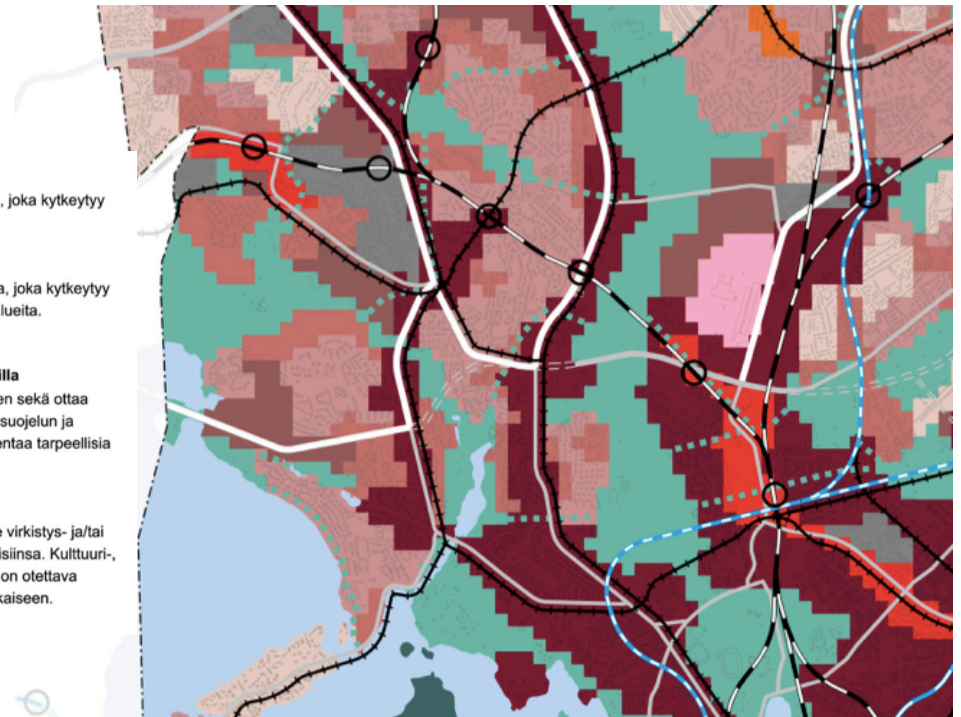
Kaikilla virkistys- ja viheralueilla sekä merellisen virkistys- ja matkailun alueilla

Suunnittelussa tulee turvata kulttuurihistoriallisten ja maisemallisten arvojen säilyminen sekä ottaa huomioon luonnon monimuotoisuuden, ekosysteempipalvelujen kehittämisen, luonnonsuojelun ja ekologisen verkoston sekä metsäverkoston kannalta tärkeät alueet. Alueelle saa rakentaa tarpeellisia yhdyskuntateknisen huollon tiloja ja liikenneväyliä alueen arvot huomioon ottaen.



Viheryhteys

Laajojen virkistysalueiden välinen yhteys, viherakseli tai puistojen sarja, joka palvelee virkistys- ja/tai ekologisen yhteytenä. Alueiden suunnittelussa viheralueet tulee liittää luontevasti toisiinsa. Kulttuuri-, maisema- ja luontoarvojen säilyminen sekä viheryhteyksien yhtenäisyys ja jatkuvuus on otettava huomioon. Yhteyden luonne voi vaihdella rakennetusta puistomaiseen ja luonnonmukaiseen. Tarvittaessa rakennetaan vihersilloja tai -allikukuja.



Helsinki city plan



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Kimmo Lapintie and Mina Di Marino

7.2.2017

Specification of the green

The green structure of the city plan is divided into two abstract categories, “recreational and green areas” and “the areas for recreation by the sea, as well as tourism”.

- The former areas are to be developed as “important recreational, outdoor activities, sports, nature and cultural areas, connected to the regional green structure and the recreational zone by the sea” (Helsinki City Plan, 2016)
- The latter, on the other hand, should be developed as an “important recreational, outdoor activities, sports, nature and cultural areas, connected to the continental recreational and green areas.” The category also includes areas for vacation building and tourism.

Urban Densification and ES

There is no information of the kinds of services the existing green areas produce or the ways they are changed as a result of the new plan. **If one third of new construction is placed on the existing (non-recreational) green corridors along the motorways, and another third on the greenfields and urban forests,** one would expect major changes in the ES provided by the existing green-blue structure.

It is not clear in what way more detailed plans would be able to safeguard, manage and develop ES and GI.

Knowledge gap

A clear gap exists between the conceptual framework developed in research, including the knowledge gathered during the preparation of the plan, and the conceptual framework used in the final plan.

One can clearly see that the two traditional concepts in planning, **recreation and nature conservation**, are overwhelmingly **dominant**.

Discussion and Conclusion

Discussion

This study reveals how limited the understanding of the urban green still is, despite decades of research on GI, ES, health effects, micro-climates, and storm water management dealt with by urban ecology. The **two functions of recreation and preservation still dominate the field.**

Discussion

Our debate is still about the amount of green that can be sacrificed for urban development, which areas should be preserved, and what form the green network should take.

Conclusion

The main points seem to be too complex to handle: the avoiding of the juxtaposition of urban development and urban green, the understanding of urban ecology in systemic terms (and not as end-states that can be represented in two-dimensional maps), and addressing the **different qualities of the urban green** and the **respective ES**.

THANK YOU

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