

# Planning of carbon neutral city – case Helsinki

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AALTO

Systems Thinking in Sustainable Living Environment

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Helsinki



# Carbon neutral urbanisation (&)

- Paris climate accord -> Especially wealthy nations / cities must have ambitious carbon emissions reduction goals
- Urbanisation is ongoing global megatrend (year 2014 54% of population lived in cities, by year 2050 66%)

**=Climate crisis will be solved or lost in the cities**

Cities must choose their stance towards climate action

denier

freerider

climate leader

# Success from around the world

9.

Most liveable cities in the world

*Economist Intelligence Unit 2017*

2.

Most liveable cities in Europe

8.

Cleanest capitals in the world

*The Telegraph 2017*

15.

Most popular congress cities in the world

*Union of International Associations 2017*

3.

Supporting innovations and entrepreneurship

*CITIE 2017*

4.

Best European cities in supporting digital enterprises and entrepreneurs

*Nesta 2016*

10.

Top 10 Smart City in Europe

*Fastcoexist 2014*

1.

Most content residents among the EU capital cities

*European Commission 2015*

3.

Best European cities in attracting skilful labour force

*INSEAD 2017*

3.

Top 3 tourist destinations

*National Geographic 2017  
Lonely Planet 2016*

City of Design since 2014

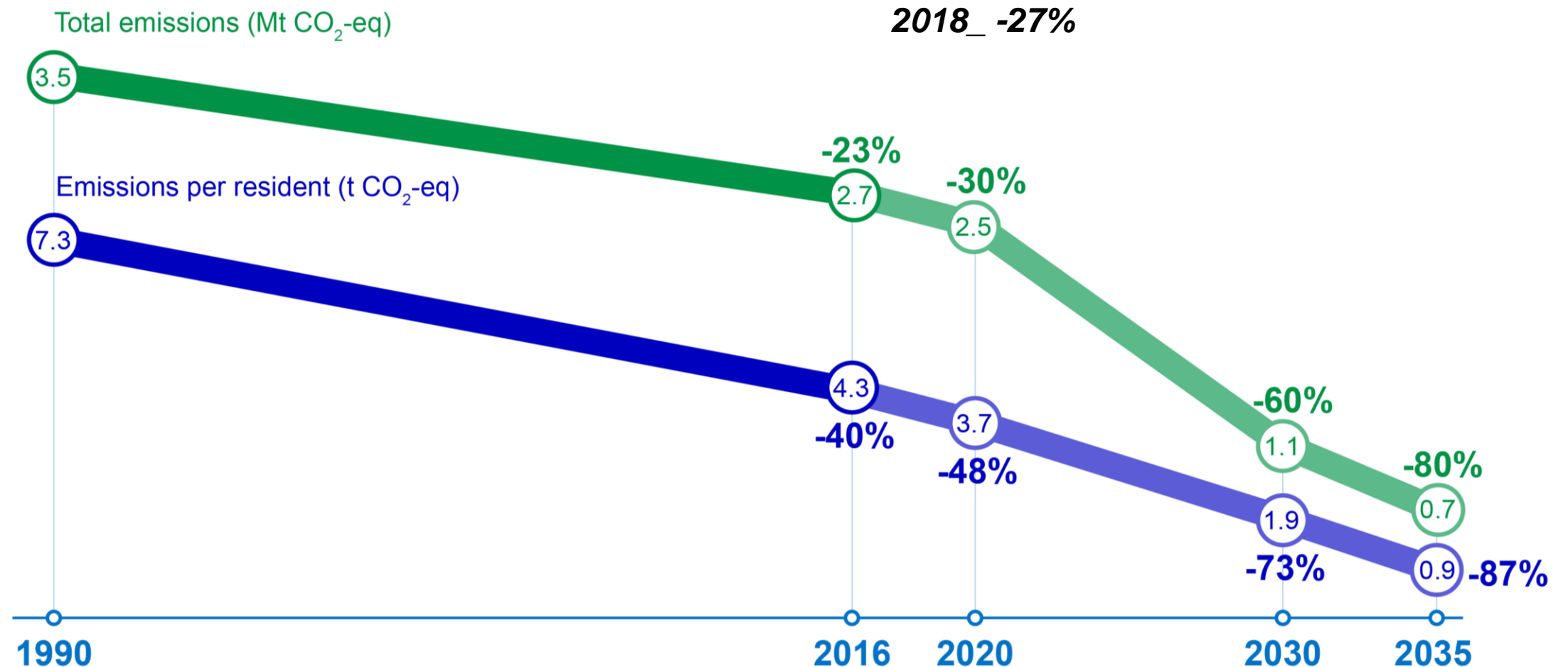
*Unesco Creative Cities*

World Design Capital 2012

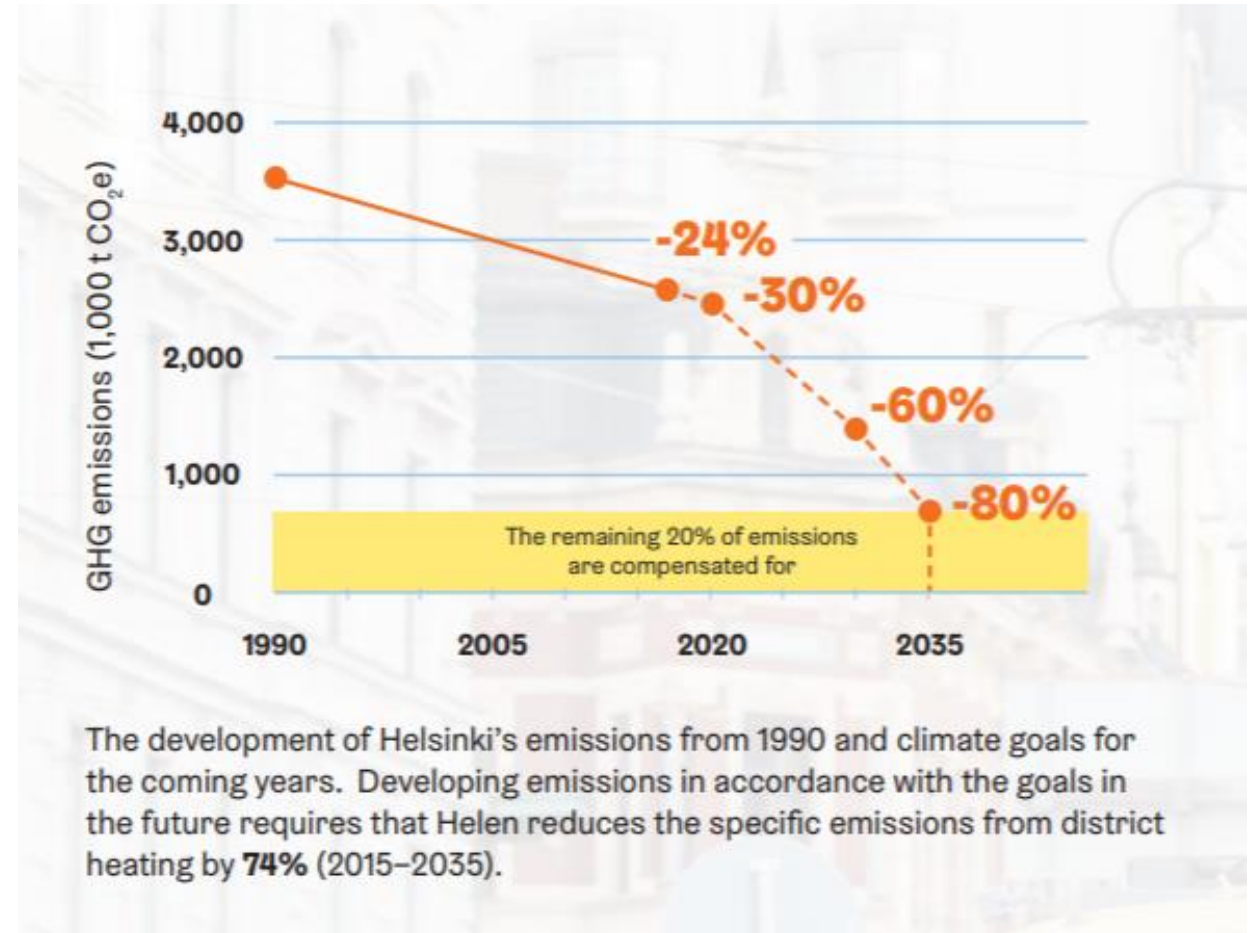
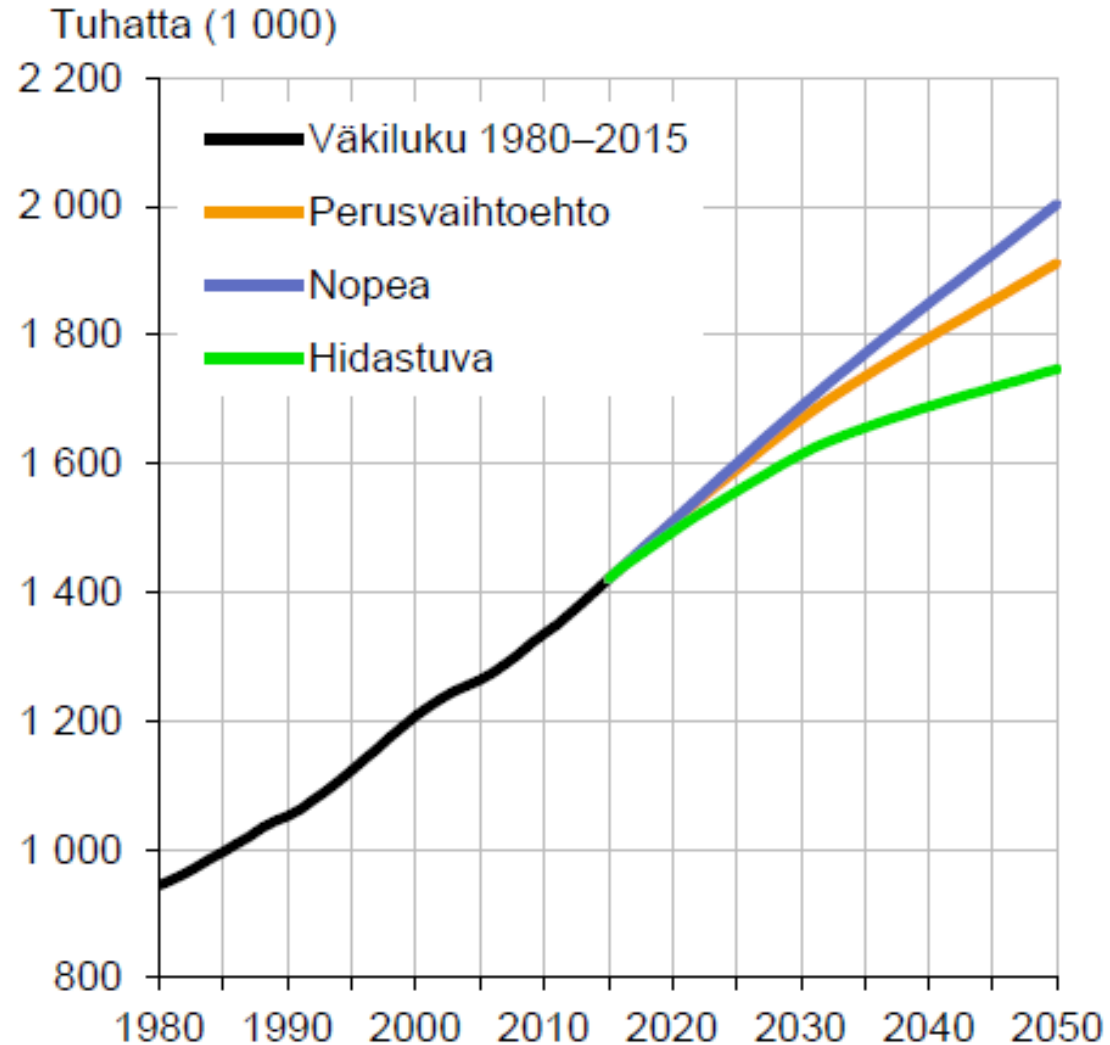
*ICSID*

Who else?

# Helsinki is set to be carbon neutral by 2035

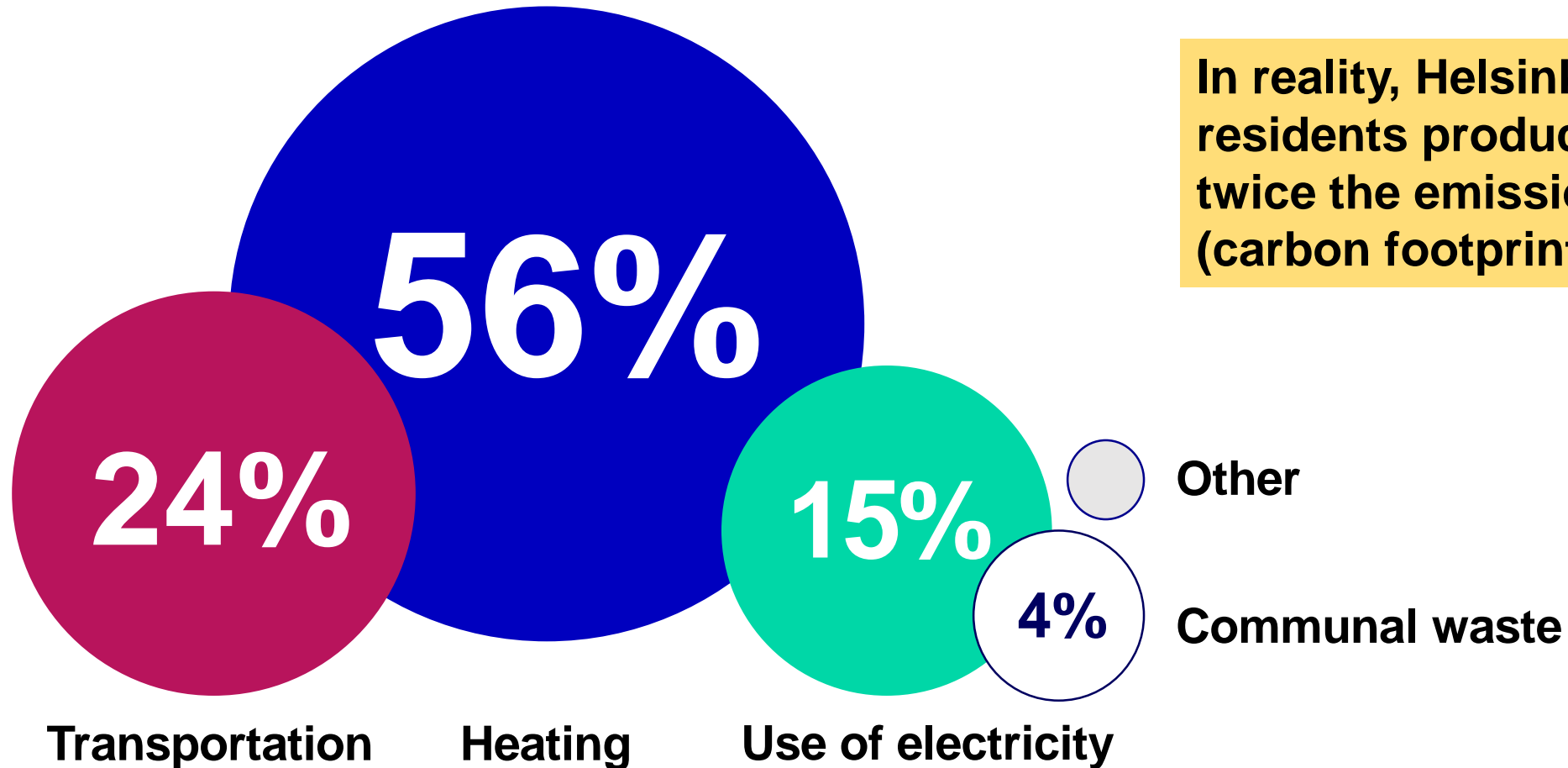


# Growing city – lower emissions – is it possible?



# Carbon-neutral Helsinki 2035 Action Plan

# Where do Helsinki's GHG emissions come from?



In reality, Helsinki residents produce twice the emissions (carbon footprint)!

# Carbon-neutrality in practice, 2035

30 % electric cars and plug-in hybrids (currently 0,7 %)

Total heat consumption -20 % from today

15 % solar power (0,1 %)

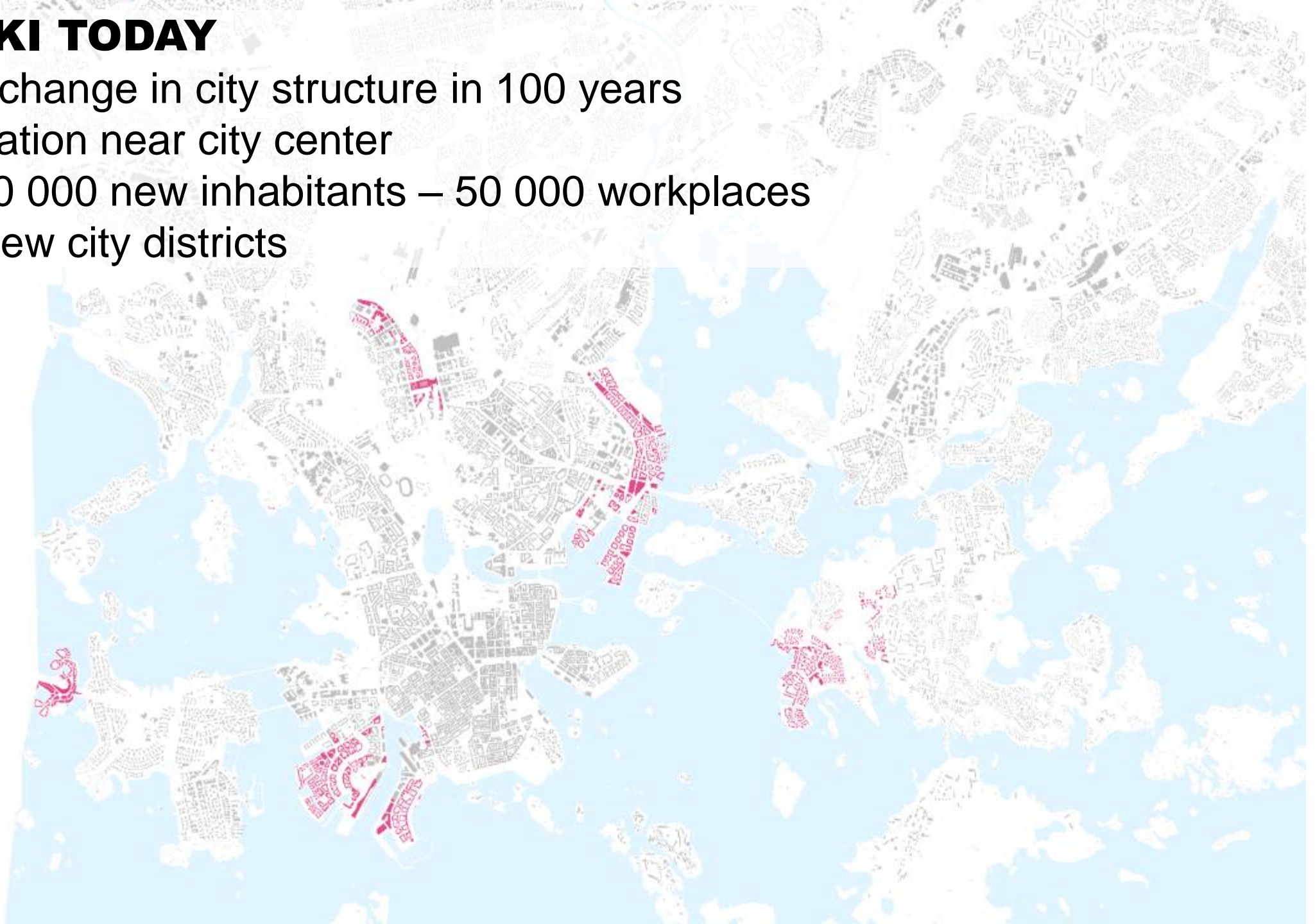
15 % of the consumption by heat pumps (geoenergy)  
(0,5 %)

Carbon-neutral districts – planning has to start now!



# HELSINKI TODAY

- Biggest change in city structure in 100 years
- Densification near city center
- Some 70 000 new inhabitants – 50 000 workplaces
- Whole new city districts







Kalasatama in 2008 when the port still operated in the area.



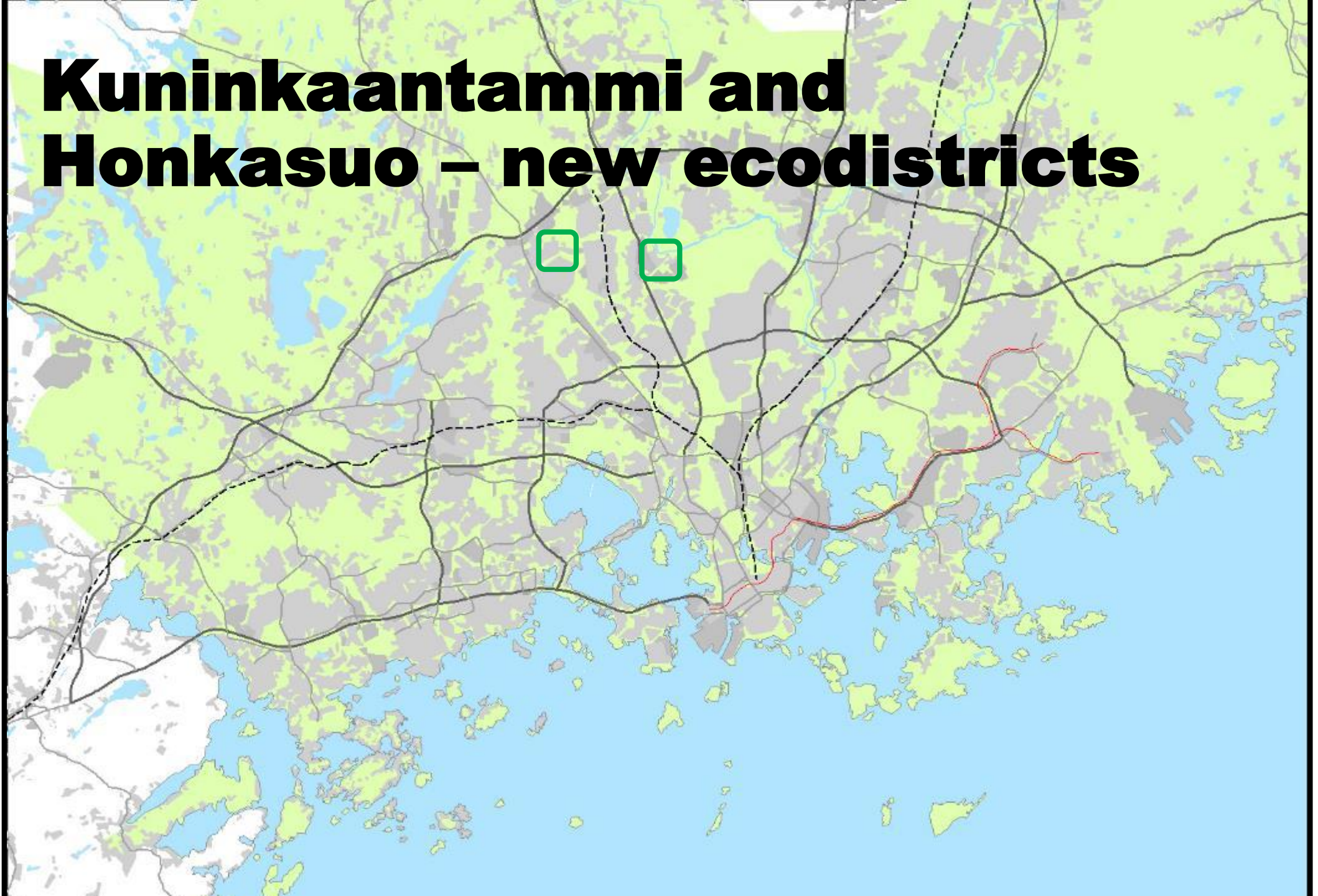
**Carbon neutral  
target year!**

Kalasadama by 2035: 25,000 new residents / 2,000 new housing units / 10,000 jobs



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# Kuninkaantammi and Honkasuo - new ecodistricts



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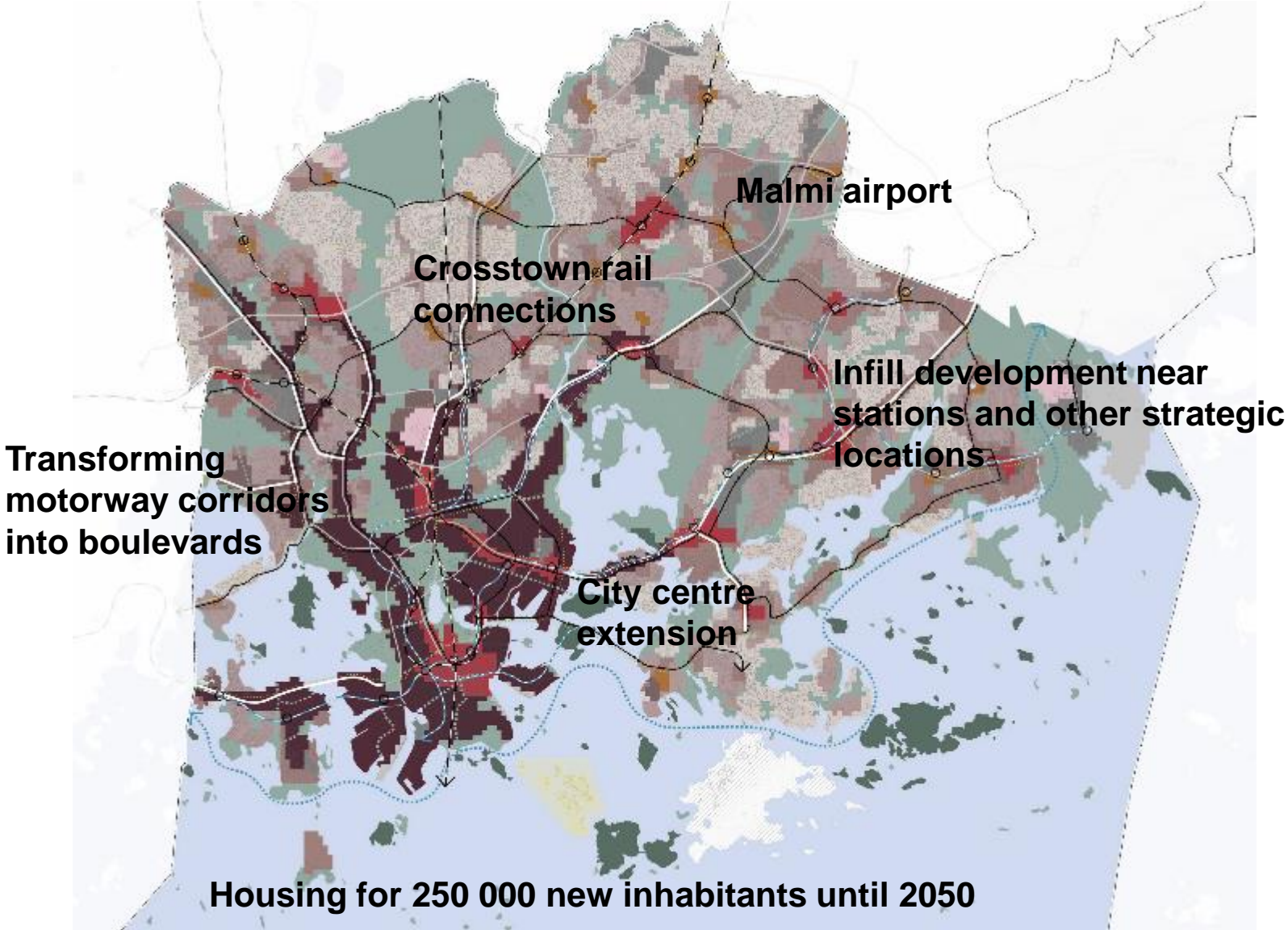


*“Energy efficiency on new buildings needs to be better than national requirements”*

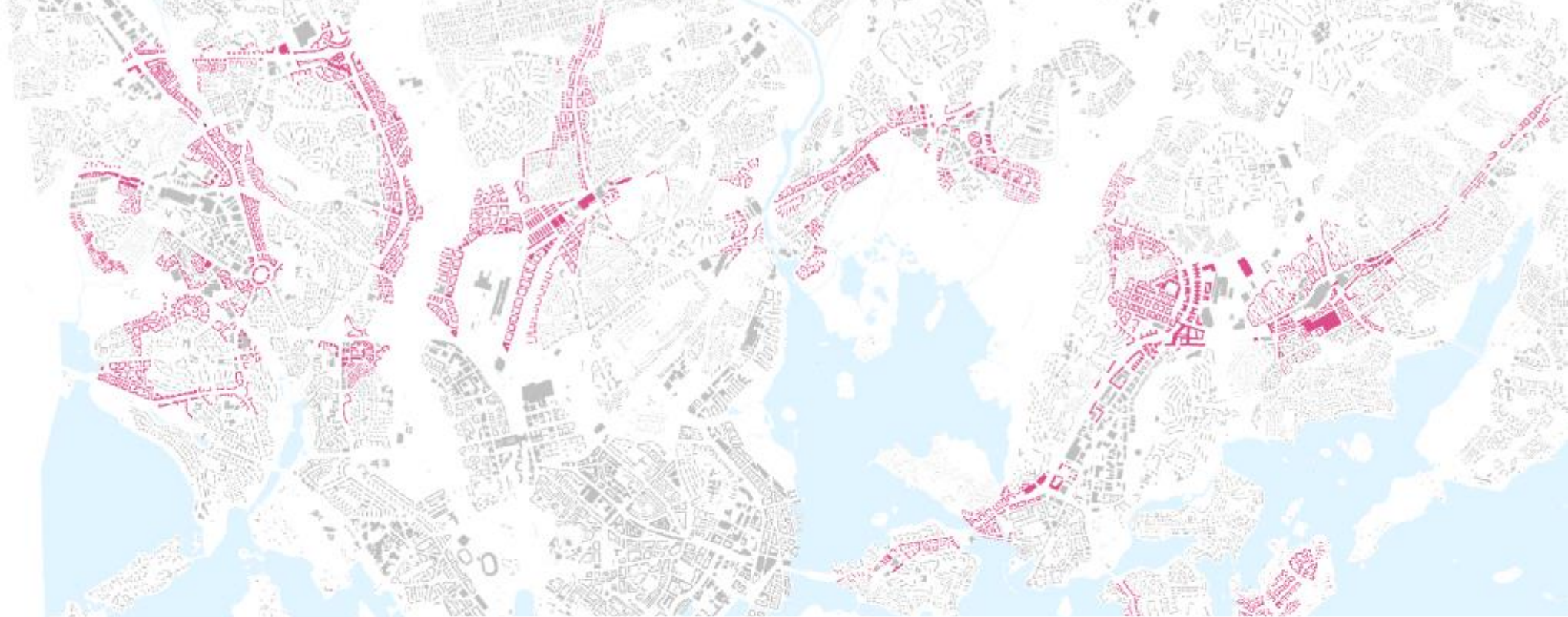
*“Renewable energy production systems must be integrated in to buildings architecture”*



# City Plan 2016







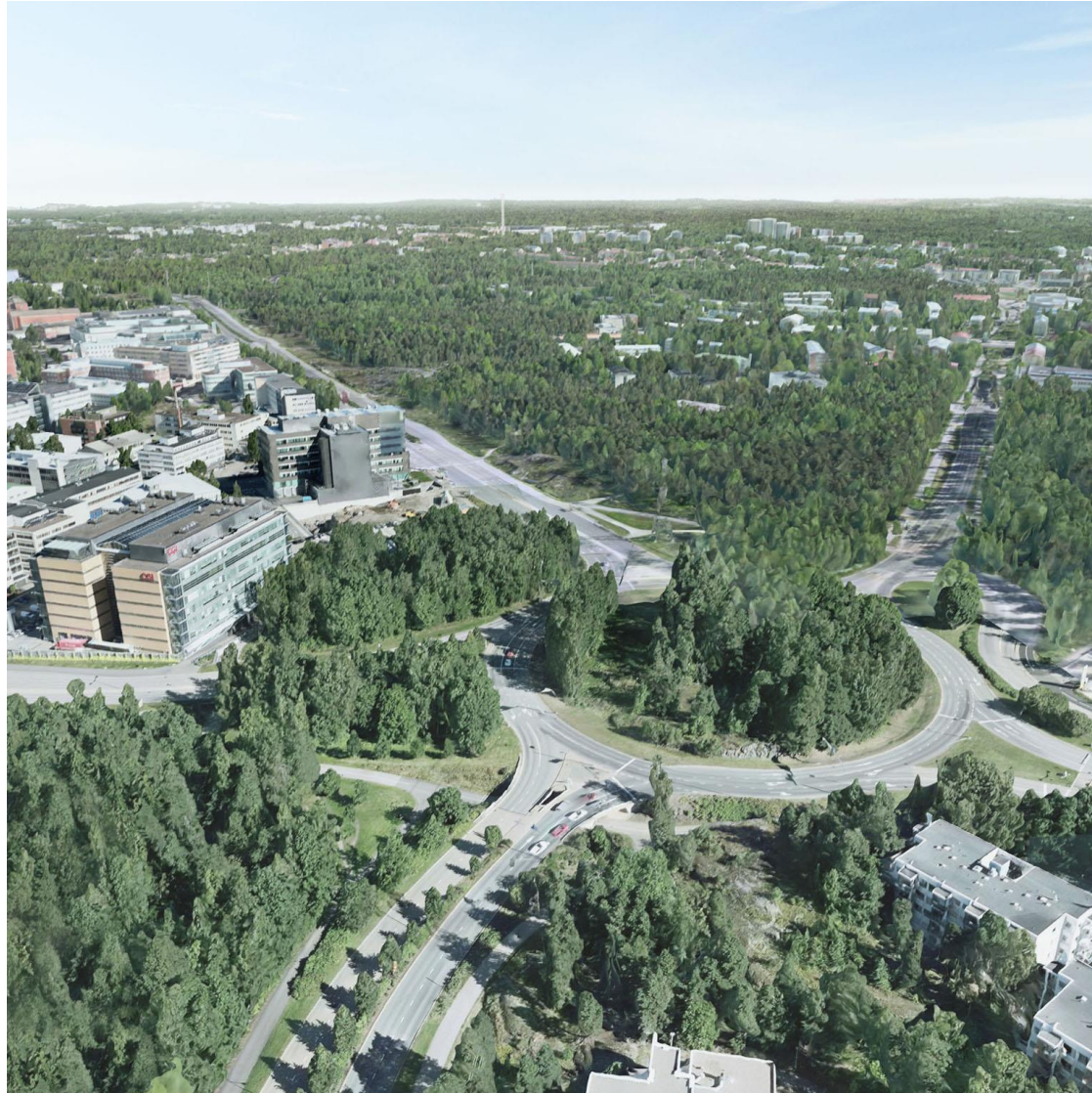
## **HELSINKI TOMORROW**

- Densification of suburban area
- Converting current inner city highway corridors into city boulevards
- Strengthening of sustainable and highly networked city fabric
- Implementing traffic plans according new planning paradigm

# Highways to boulevards



# Vihdintie Boulevard



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**”Urban, carbon neutral city district instead of private car traffic orientated land use”**

# Pedestrians, cyclists and public transport prioritized



# Baana - first cycle highway in Helsinki




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# Energy Production - CHPC



- Energy company Helen owned 100% by city of Helsinki
- Basis is highly energy efficient CHPC-production and wide network
- Main challenge is to get rid of fossile fuels



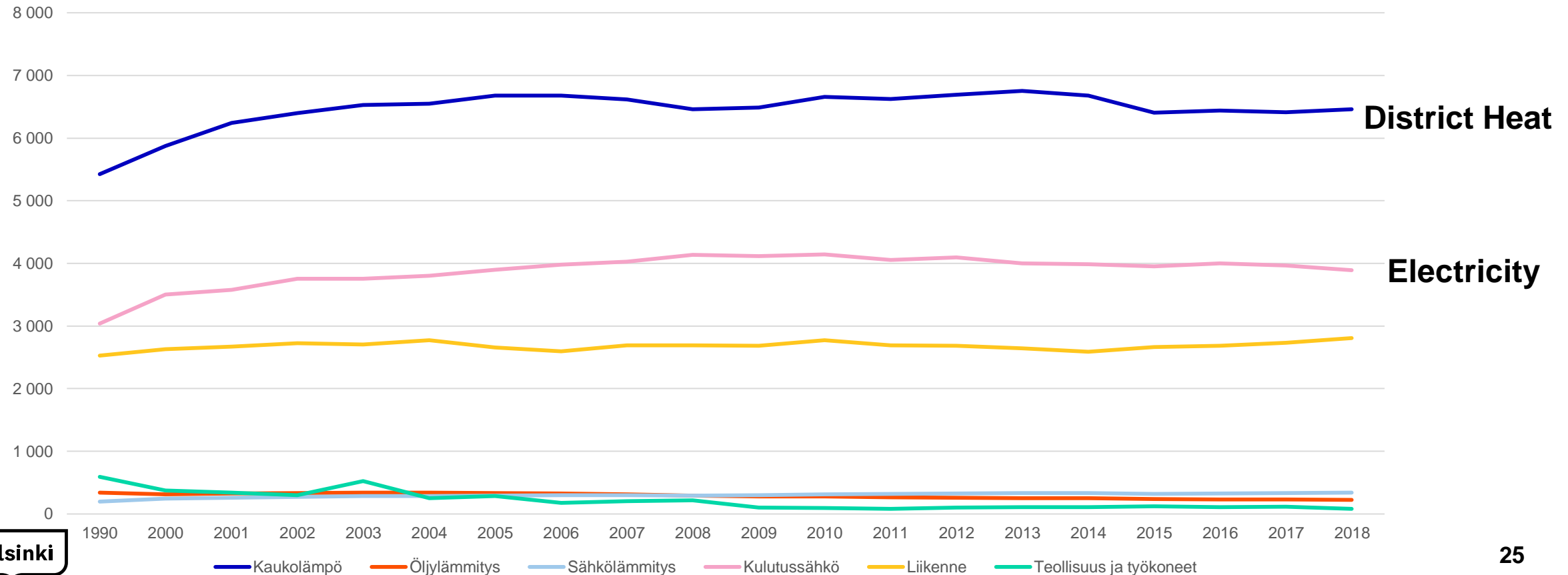
A photograph of an industrial facility, likely a power plant or refinery, situated along a body of water. A prominent, tall, grey smokestack stands on the left. In the center, a large, dark, conical pile of material, possibly coal or slag, is visible. To the right, several large cranes and industrial structures are present. The sky is blue with scattered white clouds. A semi-transparent white banner with black text is overlaid across the middle of the image. In the foreground, there is a concrete pier or breakwater extending into the water, with a fence and some greenery behind it. The water is calm and reflects the sky.

**How does the energy landscape  
of Carbon neutral city look like?**

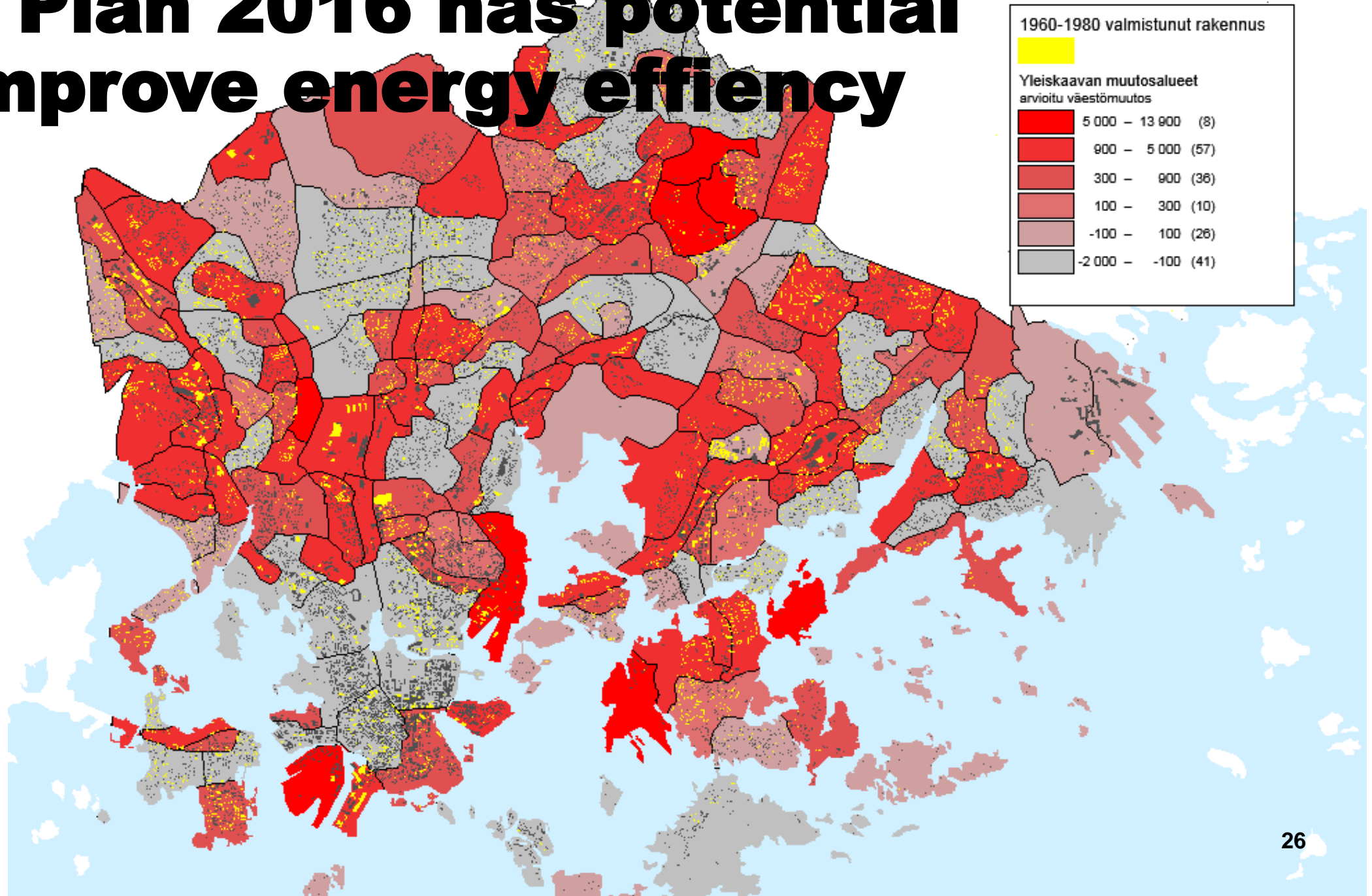


# Energy Consumption in Helsinki (1990-2018)

Energian kulutuksen kehitys (GWh) /HKI

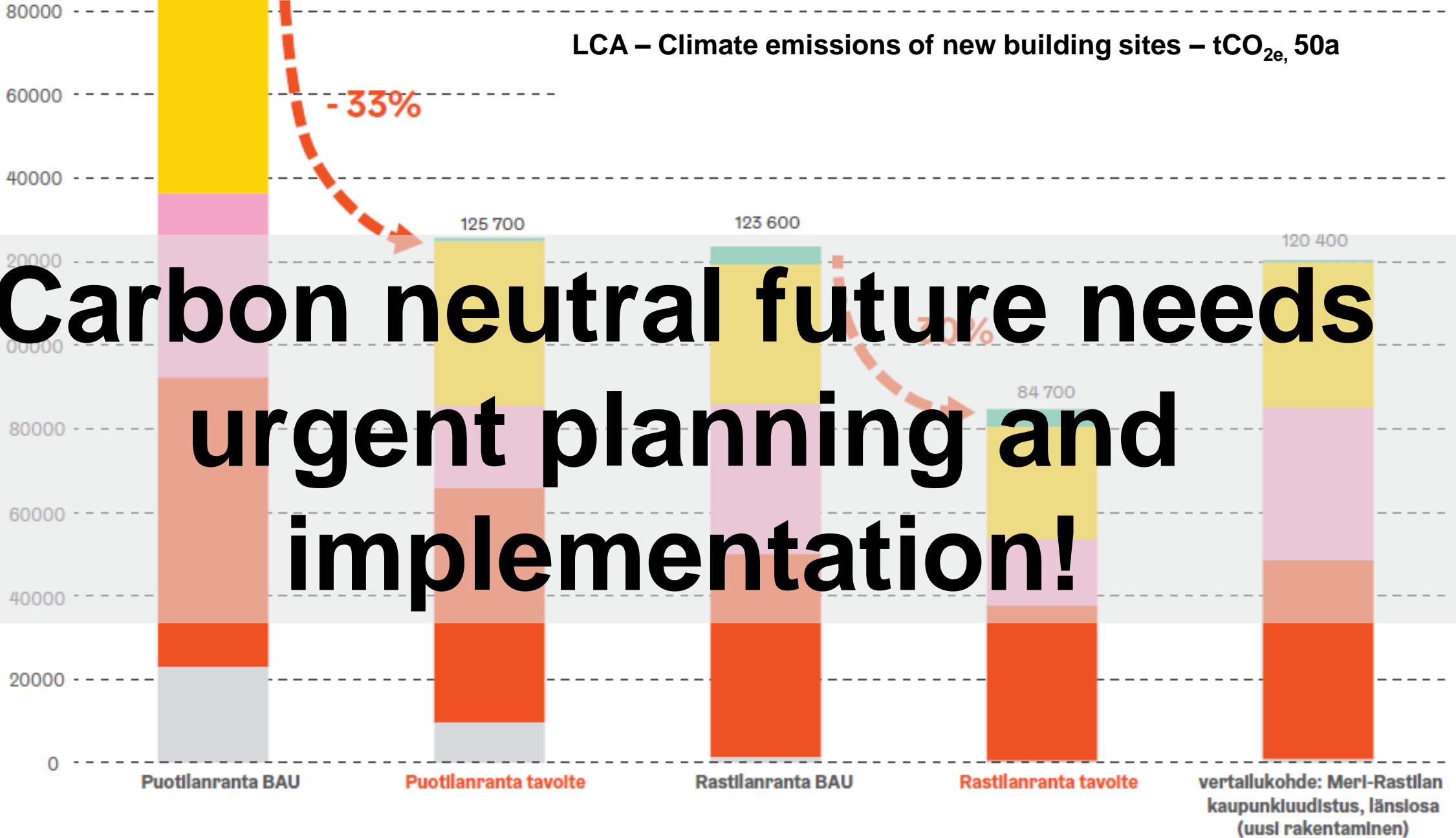


# City Plan 2016 has potential to improve energy efficiency



LCA – Climate emissions of new building sites – tCO<sub>2e</sub>, 50a

**Carbon neutral future needs urgent planning and implementation!**



- Land preparation
- Building

- Energy
- Traffic

- Vegetation loss

# What are Helsinki residents worried about? (2018)

