



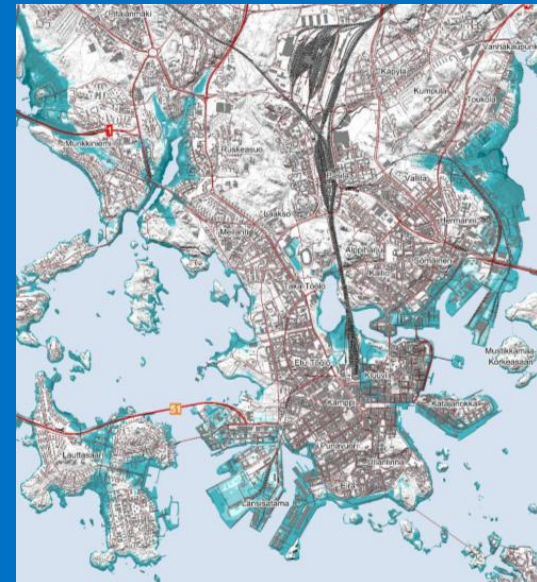
City of Helsinki



# Adapting to Climate Change in Helsinki

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29 August, 2012





# Content

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## 1. Adaptation framework in Helsinki

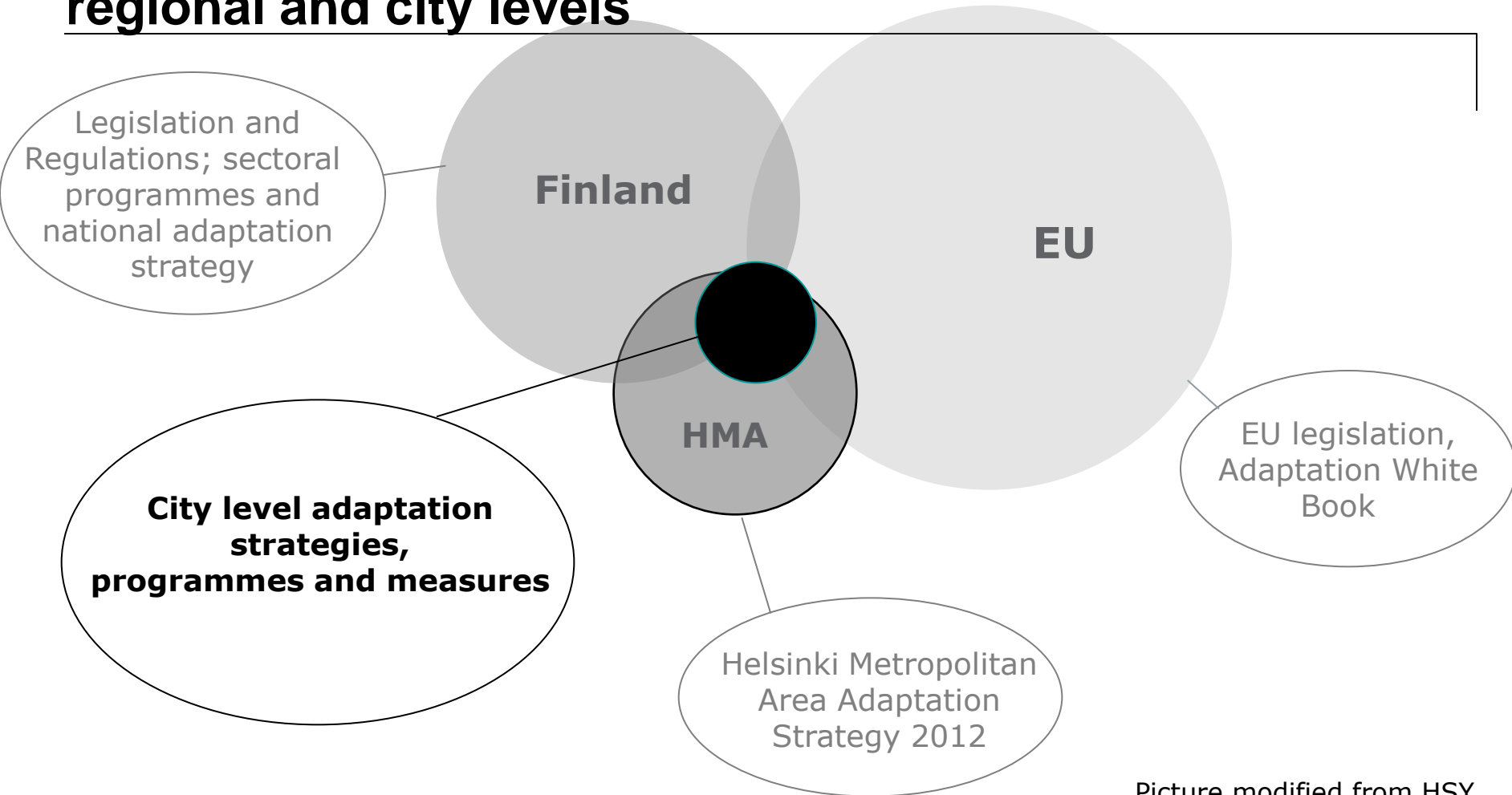
## 2. Adaptation assessment in Helsinki 2009-2012 (BaltCICA project):

- 2.1 Evaluation of existing adaptation related plans and programmes etc.
- 2.2 Impacts of climate change in Helsinki, risks and vulnerability
- 2.3 Adaptation costs from the city's perspective
- 2.4 Necessary additional adaptation measures in Helsinki

## 3. Further work on adaptation



# 1. Adaptation to climate change at EU, national, regional and city levels



Picture modified from HSY



## 2.1 Adaptation related plans and programmes in Helsinki

- Contingency plans to secure the energy supply system 2010
- Survey of adaptation measures in building and maintaining public spaces 2010
- Short-term action plan for a sudden deterioration of air quality in the Helsinki Metropolitan Area 2010 (street dust, forest fires)
- Guidelines for maintenance of forests and green areas 2009
- Flood strategy 2008
- Storm water strategy 2007

The National Government requires that municipalities investigate in 2011-2012:

- Flood risk areas
- Storm water risk areas



# Storm water strategy (2007)

## Objectives:

- Improving the management and utilization of storm waters
- Prevention of storm water damage

## Measures address:

- Land use planning
- Building, permit procedures
- Planning and building of public spaces
- Planning and building of the sewage network



Photo: Department of Public works, Viikinoja



Photo: Jari Viinanen



## Flood strategy (2008)

### Objectives:

- Mainly prevention of flood damage due to high sea water levels

### Measures deal with:

- Purchasing of flood protection equipment
- Alert systems
- Inventory of flood risk areas and sites
- Preparation of instructions for flood protection



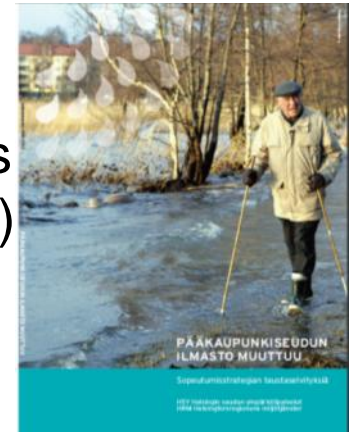
Photo: Pekka Kansanen



## 2.2 Climate change impacts in Helsinki

Background studies 2009-2010

1. Climate and sea level change scenarios for the area (Finnish Meteorological Institute)
2. Modelling the risks of river floods in River Espoo and Vantaa (Finnish Environment Institute SYKE)
3. A study of impacts of climate change in the region and survey of existing preparedness plans, programs guidelines, legislation and adaptation research (HSY)
4. Experts and planners of the cities were also interviewed on the consequences of extreme weather to their everyday work



"Climate is changing in the Helsinki Metropolitan Area"





## 2.3 Examples of weather induced costs

Incident	Cost
Additional cost from heavy snowfalls 2010	11 Me
Additional cost from slippery conditions 2011 (pedestrian injuries caused by slipping)	0.2 Me
Additional cost to the health care system from sudden deterioration of air quality	40 000 e/day
Costs of reducing overflowing in the waste water treatment system	2 Me/10 000 m <sup>3</sup>
Replacing old combined sewers with new separated sewers for wastewater and storm water	1 Me/km
Measures to be implemented according to the flood strategy until 2014 (1-2 Me used annually)	4,5 Me





# Summary of adaptation costs

- Flooding is a serious threat to society
- From the city's perspective, the highest costs come from the building of green areas needed for storm water systems and the building and maintenance of the road network
- Cost-benefit analyses would be useful tool for planner
- Developing an information database for climate change impact costs.
- The case study implies that costs of fixed flood protection systems are larger than its benefits. Temporary protection structures is an economically viable alternative especially if the indirect impacts are taken fully into account . Still, more reliable analysis requires more detailed information.



## 2.4 Additional adaptation measures in Helsinki



Photo: Jari Viinanen

**24 measures were identified which were new or only partially realized measures.**

- Taking into account climate change adaptation in land use planning (storm waters, sea floods, green areas)
- Enhancing the advisory role of the building regulation department
- Investigating the need of cooling public buildings
- Increasing the number of trees and green areas in the city
- Incorporating management of storm water into the lease conditions of plots
- Modelling of flooding in small brooks
- Climate sustainability of construction materials
- Evaluation of flood protection structures in valuable buildings and sites
- Instructions to organisers of public events (storms)
- Contingency planning for exceptional conditions in road maintenance
- Evaluating how well tunnels and other sites can withstand flooding
- Taking into account climate risks in rescue operations and preparedness planning
- Mapping the risk factors to home-care and out-patient care (operations)



# Conclusions: required adaptation measures in Helsinki

- Flood risk management is quite well advanced at the national level due to EU legislation
- Need for city level adaptation coordination: decisions made in various city committees
- Need for integration of climate change adaptation in the activities of all departments
- Prioritization of measures
- Information to the inhabitants about adaptation included in information about climate change mitigation

Climate change adaptation practices in the City of Helsinki, with English summary

(Tiia Yrjölä ja Jari Viinanen. 2012. Keinoja ilmastonmuutokseen sopeutumiseksi Helsingin kaupungissa)

[www.hel2.fi/ympk/julkaisut/2012/julkaisu\\_02\\_12\\_net.pdf](http://www.hel2.fi/ympk/julkaisut/2012/julkaisu_02_12_net.pdf)



## 3. Further adaptation work in Helsinki

### **Resilient City – Tools for planners Project 2012-2014 (Ilmastonkestävä kaupunki – työkaluja suunnittelijoille ILKKA)**

Helsinki (coordinator) Lahti, Turku, Vantaa, HSY, Finnish Meteorological Institute and University of Turku

1. Climate change adaptation measures: peer review of cities, international benchmarking
2. Carbon sinks and their potential in cities
3. Impervious surfaces
4. Heat islands in Helsinki and Turku
5. Piloting a urban planning evaluation method that takes climate change adaptation into account
6. Natural storm water management
7. Climate change adaptation costs and sustainable city budgeting

More information on project: [tiia.yrjola@hel.fi](mailto:tiia.yrjola@hel.fi)



**THANK YOU!**

Photo: Pekka Kansanen