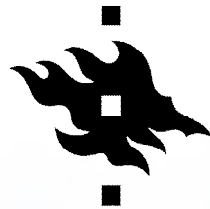


# **KAUPUNKIEN AINEENVAIHDUNTA – HANKE YHTEISTYÖSSÄ HELSINGIN YLIOPISTON, KAUPUNGIN JA EU:N KANSSA**

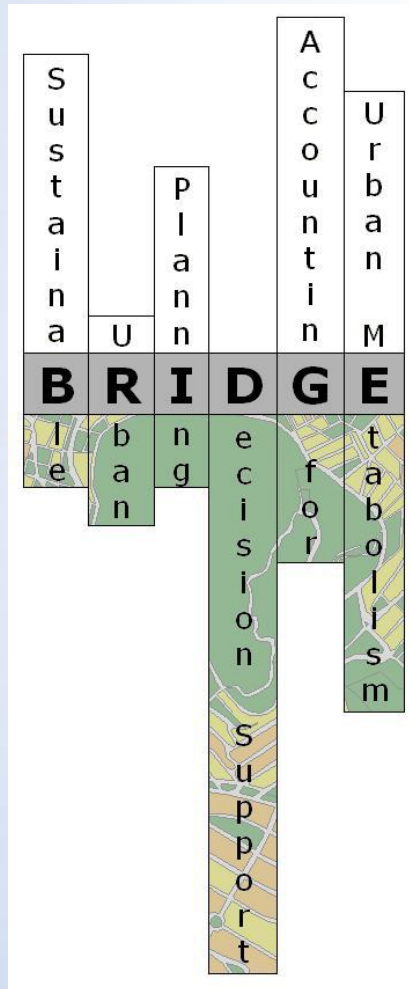
LEENA JÄRVI

10.3.2015

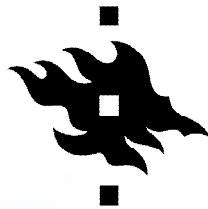


HELSINGIN YLIOPISTO

# PUITEOHJELMA 7: BRIDGE – PROJEKTI, 2008-2011



- Tarkoitus auttaa kaupunkisuunnittelijoita luomaan vaihtoehtoja kestävästä kaupunkia kohden
- Mukana kaupunkien ja ilman välinen aineenvaihdunta niin veden, lämmön kuin ilmansaasteiden osalta
- Myös sosio-ekonomiset parametrit
- Mukana 14 organisaatiota, 11 maasta



HELSINGIN YLIOPISTO

# PROJEKTISSA VIISI TAPAUSTUTKIMUS (CASE-STUDY) KAUPUNKIA

- Työkalu päätöksen teon avuksi (Decision Support System, DSS)
- Helsinki, Firenze, Ateena, Gliwice, Lontoo
- Kussakin kaupungissa muodostettiin sidosryhmä yhteisö (Community Of Practice, COP)



HELSINGIN YLIOPISTO

# PROJEKTISSA SIDOSRYHMÄT AKTIIVISESTI MUKANA

- Helsingissä 1. kaupunkisuunnittelijoiden kokous kesällä 2009
  - 20 osallistujaa, 5 maasta
  - Edustettuina mm. Helsingin kaupungin kaupunkisuunnitteluvirasto, Ympäristökeskus, Helsingin Energia
- Lontoossa talvella 2010 sidosryhmä tapaaminen
- Brysselissä syksyllä 2011 kaupunkikehityksen kokous
  - Mukana DSS:n demoamista



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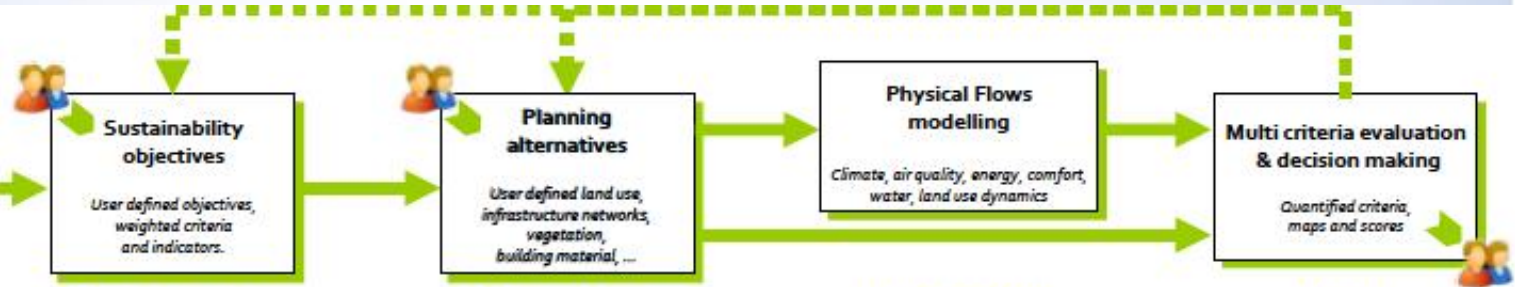


**Representation of actual city**  
*Land use, land cover, topography, infrastructure networks, socio-economic, air quality & meteorological data*

**City databases**



**Figure 1.**  
 Helsinki land use map (top) and socio-economic data sample area (bottom)



**Define objectives and weight indicators**

**Environmental**  
 Air Quality  
 Pollutant Concentrations

**Thermal Comfort**  
 Thermal Comfort Index (ET)  
 Air Temperature

**Green spaces and Materials**  
 Green Spaces

**Economic**  
 Cost of proposed development  
 Effects on local economy (employment)

| Indicator     | Weight |
|---------------|--------|
| Environmental | 0.365  |
| Social        | 0.267  |
| Economic      | 0.364  |

**Figure 2.**  
 Extract from indicators table

**Planning alternatives**

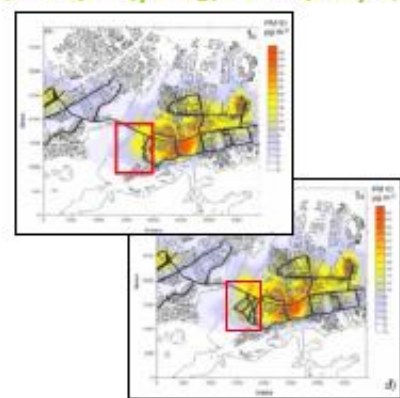


**Figure 3.**  
 Planning alternatives (examples)

**Physical Flows modelling**

*Climate, air quality, energy, comfort, water, land use dynamics*

**Compute impacts (on air quality, energy consumption, ...)**



**Figure 4.**  
 Comparison of PM10 concentration fields for baseline (top) and planning alternative (bottom)

**Multi criteria evaluation & decision making**

*Quantified criteria, maps and scores*

**Assess performances**



**Figure 5.**  
 Star diagram (top) and final score (bottom)

# The BRIDGE DSS



Socio-economic indicators values are not defined by the environmental models. These values are assigned by the user for all alternatives.

User Defined Scores

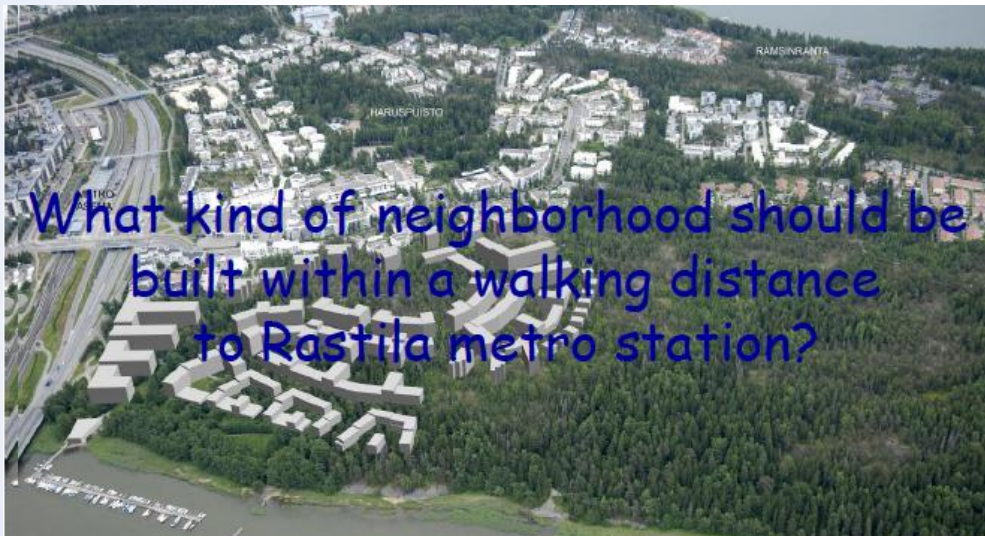
Current Site: Athens      Alternative: Base

Provide values filling the

| Category                 | Indicator   | Value                         |
|--------------------------|---|-------------------------------|
| Materials                | Volumes of materials re-used (m <sup>3</sup> )        | 728                           |
|                          | Additional Indicator                                  | Indicator provided by user: 0 |
| Land Use                 | New urbanized areas (% of total)                      | 20                            |
|                          | Brownfields re-used (% of total)                      | 50                            |
|                          | Density of development (% of total)                   | 30                            |
| Mobility / Accessibility | Quality of pedestrian                                 | 10                            |
|                          | Length of cycle-ways provided                         | 1000                          |
|                          | Length of new roads provided                          | 500                           |
|                          | Use of public transport (% of total population)       | 10                            |
|                          | Number of inhabitants with access to public transport | 100                           |
| Economic Viability       | Cost of proposed development (Euros)                  | 100000                        |
|                          | Effect on local economy - employment (No of new)      | 1                             |
|                          | Effect on local Economy -revenue- (Euros)             | 500000                        |
| Social Inclusion         | Number of inhabitants with access to services         | 200                           |
|                          | Number of inhabitants with access to social housing   | 600                           |
| Human well-being         | Number of inhabitants affected by flash flooding      | 700                           |
|                          | Number of inhabitants affected by heat waves          | 800                           |

Buttons: Save, Cancel, OK

# PROJEKTISSA HELSINGISTÄ MUKANA MERI-RASTILAN KAAVOITUS



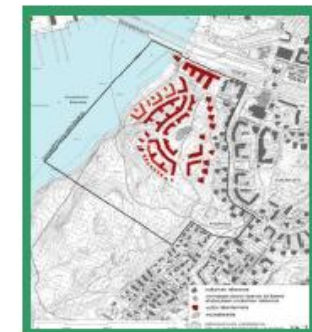
Vaihtoehto 1:  
Olemassa olevan  
kaavan  
Täydentäminen



Vaihtoehto 2:  
Rastilan mäki

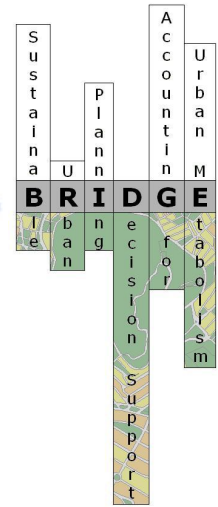


Vaihtoehto 2:  
Merellinen  
rastila

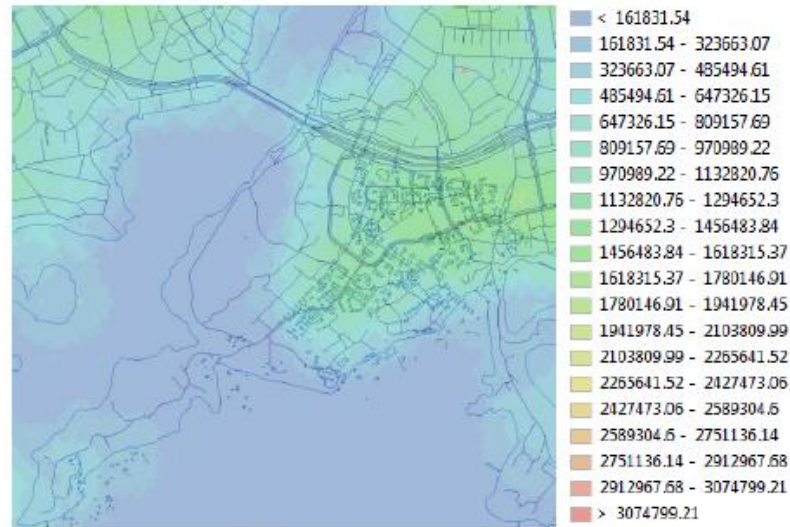


HELSINGIN YLIOPISTO

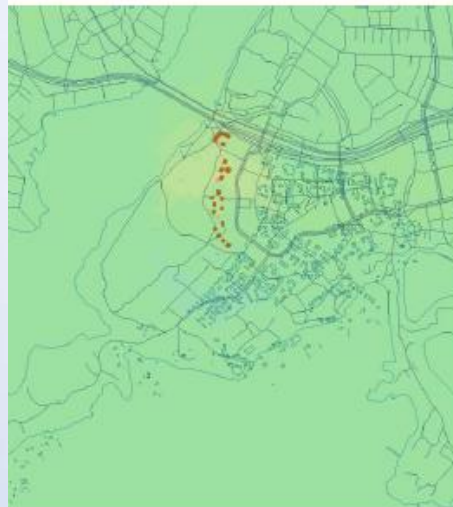
# DSS TULOS – CO<sub>2</sub> VAIHTO



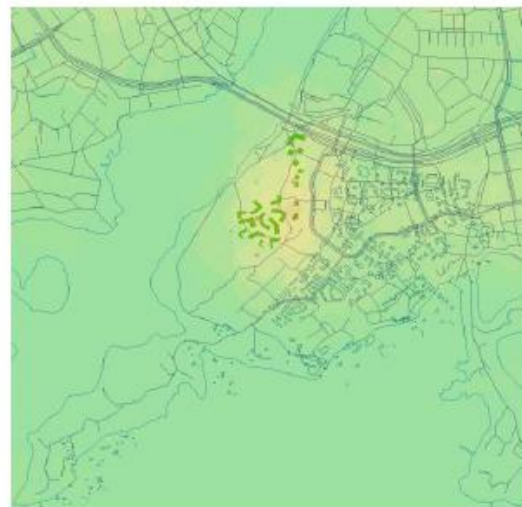
**Helsinki.**  
 Yearly cumulative  
 CO<sub>2</sub> emissions (µg/m<sup>2</sup>).  
 Alternatives' maps  
 present the difference  
 from Base.



Perus



Vaihtoehto 1



Vaihtoehto 2



Vaihtoehto 3



**MORE INFORMATION ABOUT  
THE PROJECT:  
[HTTP://WWW.BRIDGE-FP7.EU/](http://www.bridge-fp7.eu/)**

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