An integrated approach to develop the transport system of Metropolitan Helsinki

Suvi Rihtniemi 22.5.2013
Welcome to Helsinki Region
Contents of the presentation

1. On HSL in general
2. Transport System Planning in the Helsinki Region (HLJ 2011)
3. PT and HSL´s environmental goals
4. Journey Planner
1. On HSL in general
The location of the Helsinki Region in Europe
HSL moves us all

HSL provides extensive transport options and creates conditions for a viable and pleasant Helsinki region.
What does HSL do?

- Is responsible for the preparation of the Helsinki Region Transport System Plan (HLJ).
- Plans and organizes public transport in the region and works to improve its operating conditions.
- Procures bus, tram, Metro, ferry and commuter train services.
- Approves the public transport fare and ticketing system as well as public transport fares.
- Is responsible for public transport marketing and passenger information.
- Organizes ticket sales and is responsible for ticket inspection.
Cooperation area and expansion of HSL


Sipoo from the beginning of 2012.

According to its charter, HSL may expand to cover all 14 municipalities in the Helsinki region.
HSL’s operating income 2013

Total EUR 588,0 million

Ticket revenue 47.4 %
Municipal contributions 49.6%

Other income 2.0 %
Government subsidies for public transport 1.0 %

Ticket revenue

Helsinki internal 23.2 %
Regional tickets 17.8 %

Espoo internal 2.5 %
Vantaa internal 1.8 %
Extended regional tickets 1.8 %
Kirkkonummi internal 0.1 %
Kerava-Sipoo internal 0.1 %
Kauniainen internal 0.02 %
Metropol 0.1 %
HSL’s operating expenses 2013

Total EUR 586.5 million

- Operating costs 79.5%
  - Infra services 11.8%
  - Other purchases of services 4.4%
  - Personnel expenses 2.9%
  - Rents 0.7%

Operating costs by service:

- Bus services 53.8%
- Train services 11.9%
- Tram services 8.5%
- Metro services 4.2%
- Ferry services 0.7%
- Metropol 0.3%
2. Transport System Planning in the Helsinki Region
HSL:s strategy

Target 2018
Helsinki region has the most efficient transport system and the most satisfied users of public transport in Europe

Strategic goals
1. Helsinki region has a well-functioning transport system
2. HSL provides its customers with high-quality, cost-efficient and reasonable priced public transport services
3. HSL promotes low-emission transport choices
4. HSL in an player on the field of transport policy
5. HSL's operations support its owner munisipalities’ and region’s development targets
6. HSL has motivated and competent staff

Basic task
HSL provides extensive transport options and creates conditions for a viable and pleasant Helsinki region.

Stakeholder expectations
Owner municipalities
Customers
Business and industry
Operators
Civic organizations
State administration

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22.5.2013
The role of the Helsinki Region Transport System Plan (HLJ)

- A long-term strategic plan that considers the transport system as a whole.
- Aligns regional transport policy and guidelines primary measures for the development of the transport system.
- An important part of the land use, housing and transport (MAL) co-operation of the 14 municipalities of the Helsinki region and an important part of the letter of intent on land use, housing and transport.
- The next transport system plan (HLJ 2015) is prepared in close cooperation with the common regional land use plan.
HSL area and HLJ planning area

Land area approximately 3700 km²
Population 1.3 million

Municipalities of the Keski-Uusimaa Region (KUUMA)

Cities of the Helsinki Metropolitan Area

HSL Region 1.1.2012

Helsinki metropolitan area municipalities:
Surface area: 770 km² (21%)
Population: 1,034 milj. (77%)
Points of emphasis in Helsinki Region Transport System Plan (HLJ 2011)

- Performance of the transport system
- Integration of land use and transport
- Combating climate change
The transport system is developed by implementing a diverse range of measures set out at different development levels through cooperation between the parties.

1. Sustainable urban structure and land use
2. Public transport, walking and cycling connections and services
3. Mobility management, pricing and regulations
4. Operation and maintenance of the transport system
5. Transport infrastructure
Infrastructural development projects to be launched in the first period (2011-2020), in the order of priority (HLJ 2011)

1. Small and cost efficient infrastructural projects in the metropolitan area (KUHA)
   - Infrastructure for walking and cycling
   - Infrastructure for intelligent transport systems
   - Park and ride connections
   - Securing the functionality of public transport and freight transport on radial roads
   - Improving traffic safety of the arterial network
   - Noise abatement projects
   - Freight transport service areas
   - Road projects that support the development of land use
   - Improving crosstown connections of the road and street network
   - Small development projects of the rail traffic

2. Arrangements needed for Jokeri 2 bus route
3. Removing the bottlenecks on Ring Road I
4. Feeder services for the West Metro and the Ring Railway Line
5. Improving Ring Road III (E18), phase 2
6. Increasing the capacity of the Pasila–Riihimäki rail connection
7. City rail link Leppävaara–Espoo
8. Klaikkala bypass
9. Hyrylä eastern bypass
10. Pisara Rail Loop
11. Extension of the metro to the west and east
    - Metro Matinkylä–Kivenlahti
    - Metro Mellunmäki–Majvik
12. Jokeri light rail link
13. Rail connection to Laajasalo

The KUHA projects necessitate closer programming and prioritization through regional cooperation
Rail traffic development projects

- Ongoing project
- Launch in 2011-2020
- Launch in 2021-2035

- Ring Railway Line
- Raising the capacity of the Pasila–Riihimäki rail connection
- Kerava-Nikkilä Rail Link
- Airport Rail Link
- City Rail Link Leppävaara–Espoo
- Espoo-Hista Rail Link
- Metro Matinkylä–Kivenlahti
- Metro Ruoholahti–Matinkylä
- Science tram line
- Pisara Rail Loop
- Metro Mellunmäki–Majvik
- Jokeri light rail link
- Rail connection to Laajasalo
Land use planning - process

Vision for Helsinki Region
MAL 2050-strategy
Limitedless Metropol
Vision for KUUMA-municipalities

MAL 2020 Implementation program

Further studies and regional consolidation

Land use Structure Plan
Inhabitants Housing Industries Services Nature and Green Areas

Draft of the plan
Knowledge base and results for HLJ-draft preparations

Helsinki Region Land use Plan

Helsinki Region Transport Plan HLJ 2015

HLJ 2015-process

HLJ-strategical-study

Tulevaisuuskuvat
MALPE-kehys
Tietojärjestelmät

Clarification of sidestrategies

Active co-operation and interaction

Preliminary estimations for land use for HLJ-process

MAL-HLJ-interaction

HLJ 2015-draft

HLJ-development-strategy
MAL-co-operation
Sustainable mobility
Mobility guidance and control
Operational work and Maintenance
Road traffic solutions

Knowledge base and results for HLJ-draft preparations

HLJ 2015-process

HLJ 2011 + continuation, MAL-work and other starting points

MAL-intention 2016-2019

Evaluation of the impacts SOVA
3. PT and HSL’s environmental goals
# HSL:s strategy

## Target 2018

HSL provides extensive transport options and creates conditions for a viable and pleasant Helsinki region.

## Strategic goals

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Helsinki region has a well-functioning transport system</td>
</tr>
<tr>
<td>2.</td>
<td>HSL provides its customers with high-quality, cost-efficient and reasonable priced public transport services</td>
</tr>
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<td>3.</td>
<td>HSL promotes low-emission transport choices</td>
</tr>
<tr>
<td>4.</td>
<td>HSL is a player on the field of transport policy</td>
</tr>
<tr>
<td>5.</td>
<td>HSL’s operations support its owner municipalities’ and region’s development targets</td>
</tr>
<tr>
<td>6.</td>
<td>HSL has motivated and competent staff</td>
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## Stakeholder expectations

- Owner municipalities
- Customers
- Business and industry
- Operators
- Civic organizations
- State administration

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Public transport as part of the transport system

The high market share of public transport is important

- Train service
- Metro
- Tram
  → locally emission-free
- Bus service
  → Works mainly with diesel fuel
  → About 1400 buses, 50 CNG
- Half of public transport trips are made by bus
Development of PT

Journeys made by the metropolitan area residents by car and public transport in the metropolitan area.
Development of PT

The share of public transport of the motor vehicle journeys made by the metropolitan area residents within the metropolitan area.

![Graph showing the share of public transport from 1966 to 2008.](image)
## Change in the number of boardings 2011-2012

**Million boardings**

<table>
<thead>
<tr>
<th></th>
<th>FS 2012</th>
<th>2011</th>
<th>Change</th>
<th>Change%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buses</td>
<td>176.7</td>
<td>172.5</td>
<td>4.2</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Metro</td>
<td>62.2</td>
<td>61.5</td>
<td>0.7</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Trams</td>
<td>57.2</td>
<td>53.7</td>
<td>3.5</td>
<td>6.6 %</td>
</tr>
<tr>
<td>Commuter trains</td>
<td>47.2</td>
<td>46.6</td>
<td>0.6</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Ferry</td>
<td>1.6</td>
<td>1.7</td>
<td>-0.1</td>
<td>-2.1 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>344.9</td>
<td>335.9</td>
<td>8.9</td>
<td>2.7 %</td>
</tr>
</tbody>
</table>
### Number of vehicles 2012

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buses</td>
<td>1,345</td>
</tr>
<tr>
<td>Metro trains units</td>
<td>54</td>
</tr>
<tr>
<td>Trams</td>
<td>132</td>
</tr>
<tr>
<td>Commuter train units</td>
<td>106</td>
</tr>
<tr>
<td>Ferries</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,641</strong></td>
</tr>
</tbody>
</table>
Overall grade to HSL’s public transport services by mode of transport 2011-2012

A total of 81.7% of passengers gave public transport services either a good or a very good overall grade (4 and 5).

Only less than 2.0% of passengers gave a poor or very poor overall grade (1 and 2).
**HSL:s strategy**

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**Basic task**

HSL provides extensive transport options and creates conditions for a viable and pleasant Helsinki region.

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**Stakeholder expectations**

- Owner municipalities
- Customers
- Business and industry
- Operators
- Civic organizations
- State administration

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22.5.2013
HSL's strategy for 2018 - a low-emission transport

• The environmentally-friendly transport system is promoted in accordance with the HLJ (2011)
• Public transport frame is built upon rail
  ➔ West metro (Länsimetro) and Circle line (Kehärata) have been introduced
  ➔ Pisara Rail Loop, Jokeri light rail link
  ➔ Regional lines are changed to feeder

• Public transport emissions have decreased
  ➔ NOx -emissions - 80%
  ➔ particle emissions - 80%
  ➔ CO2 -emissions -50%

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Ten years co-operation with VTT

• RAKEBUS

• RASTU

• TRANSECO
  → HDENIQ

• TRANSSMART

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HDENIQ – emission database for city buses

- HSL's point of view the project has produced useful information eg. city buses for actual emissions and energy consumption
- Information that is not available elsewhere, according to the same

   → Actual emissions based on scoring models are introduced HSL's competitive tendering from 2010

<table>
<thead>
<tr>
<th>Braunschweig</th>
<th>CO g/km</th>
<th>HC g/km</th>
<th>CH4* g/km</th>
<th>NOx g/km</th>
<th>PM g/km</th>
<th>CO2 g/km</th>
<th>CO2 eqv g/km</th>
<th>FC kg/100km</th>
<th>FC MJ/km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel Euro 3</td>
<td>0.85</td>
<td>0.12</td>
<td>0.00</td>
<td>8.48</td>
<td>0.209</td>
<td>1191</td>
<td>1191</td>
<td>38.4</td>
<td>16.3</td>
</tr>
<tr>
<td>Diesel EEV</td>
<td>0.90</td>
<td>0.02</td>
<td>0.00</td>
<td>6.03</td>
<td>0.071</td>
<td>1126</td>
<td>1126</td>
<td>36.4</td>
<td>15.5</td>
</tr>
<tr>
<td>CNG Euro 3</td>
<td>0.05</td>
<td>2.64</td>
<td>2.51</td>
<td>9.44</td>
<td>0.019</td>
<td>1177</td>
<td>1237</td>
<td>43.7</td>
<td>21.5</td>
</tr>
<tr>
<td>CNG EEV</td>
<td>2.00</td>
<td>1.11</td>
<td>1.05</td>
<td>2.99</td>
<td>0.008</td>
<td>1250</td>
<td>1274</td>
<td>46.3</td>
<td>22.7</td>
</tr>
</tbody>
</table>

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HSL follows new technology options

Biogas

Paraffinic renewable diesel

Hybrid technology

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Etanol
New projects with VTT

• eBus
  → 4 years project
  → Testing 5-6 full electric buses
  → What winter cause electric buses

• eCharge
  → How and where to charge
  → How often charge
  → What kind of infrastructure
4. Journey Planner, emission calculator
Journey Planner functions

- Route search
- My stops
- Timetables (by stop and transport mode)
- Line map
- Disruption info
- Cycling and walking guide
## Route search

### Route search

From: Kehraajantie 18, Espoo  
To: Taksanenlahti 3, Helsinki  
Time: 14:00  
Date: Today  

[Search]

### Timetable search

Route or stop number:  
Search

---

### Route suggestion

<table>
<thead>
<tr>
<th>Start</th>
<th>Arrival</th>
<th>Travel Time</th>
<th>Total Walking Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 14:20 14:26 14:45</td>
<td>15:13</td>
<td>53 min</td>
<td>1,4 km</td>
</tr>
<tr>
<td>2 14:38 14:44 14:54</td>
<td>15:32</td>
<td>55 min</td>
<td>0,9 km</td>
</tr>
<tr>
<td>3 14:41 14:46 15:00</td>
<td>15:32</td>
<td>1 h 2 min</td>
<td>1 km</td>
</tr>
</tbody>
</table>

---

Please note that the results are based on estimated travel times. MIK cannot guarantee that the suggested transport connection will be successful.

---

### Route details

Distance: 1.3 km  
Emissions: 2.5 kg

Departure: 14:20  
Kehraajantie 18, Espoo  
Walking: 0.4 km

---

Weather in destination: +18 °C  
Duration: 6 min
# Emissions

**I can reduce my emissions this much:**

Kehräjäntie 18, Espoo - Jätkäsaarenlaituri 3, Helsinki

<table>
<thead>
<tr>
<th>Mode of travel</th>
<th>Distance</th>
<th>Emissions</th>
<th>Annual emissions per commuter trip</th>
<th>Annual emission reduction</th>
<th>Energy consumption of walking and cycling ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route suggestion 1</td>
<td>18.9 km</td>
<td>1.3 kg</td>
<td>576 kg</td>
<td>510 kg</td>
<td>293 kJ / 70 kcal = 1.5 pieces of chocolate</td>
</tr>
<tr>
<td>Route suggestion 2</td>
<td>19.9 km</td>
<td>1.3 kg</td>
<td>568 kg</td>
<td>518 kg</td>
<td>147 kJ / 35 kcal = &lt;1 pieces of chocolate</td>
</tr>
<tr>
<td>Route suggestion 3</td>
<td>17.3 km</td>
<td>0.3 kg</td>
<td>114 kg</td>
<td>972 kg</td>
<td>188 kJ / 45 kcal = 1 pieces of chocolate</td>
</tr>
<tr>
<td>Cycling</td>
<td>14.4 km</td>
<td>0 kg</td>
<td>0 kg</td>
<td>1086 kg</td>
<td>1503 kJ / 359 kcal = 7 pieces of chocolate</td>
</tr>
<tr>
<td>Walking</td>
<td>14.4 km</td>
<td>0 kg</td>
<td>0 kg</td>
<td>1086 kg</td>
<td>3006 kJ / 718 kcal = 14 pieces of chocolate</td>
</tr>
<tr>
<td>Car</td>
<td>14.4 km</td>
<td>2.5 kg</td>
<td>1086 kg</td>
<td>0 kg</td>
<td>0 kJ / 0 kcal = 0 pieces of chocolate</td>
</tr>
</tbody>
</table>

* Emissions have been calculated for a round trip, 220 working days a year.
** Emission reduction has been calculated by comparing the emissions of suggested routes to emissions from an average car.
*** Walking included in travel by public transport has been taken into account in the personal energy consumption.
Thank you for your attention!

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