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An integrated tool to assess the climate and health benefits of urban strategies and measures

Climate change mitigation experts and policy makers need tools to quantify the impacts of climate measures on air pollution, human health and costs to the society

We have developed an operational Impact Assessment Tool for Climate Measures in Cities

The tool enables the assessment of climate measures' effect on **GHG emissions and $PM_{2.5}$ induced health impacts and costs** in an integrated manner

Scan & try the demo version of the tool on your mobile:

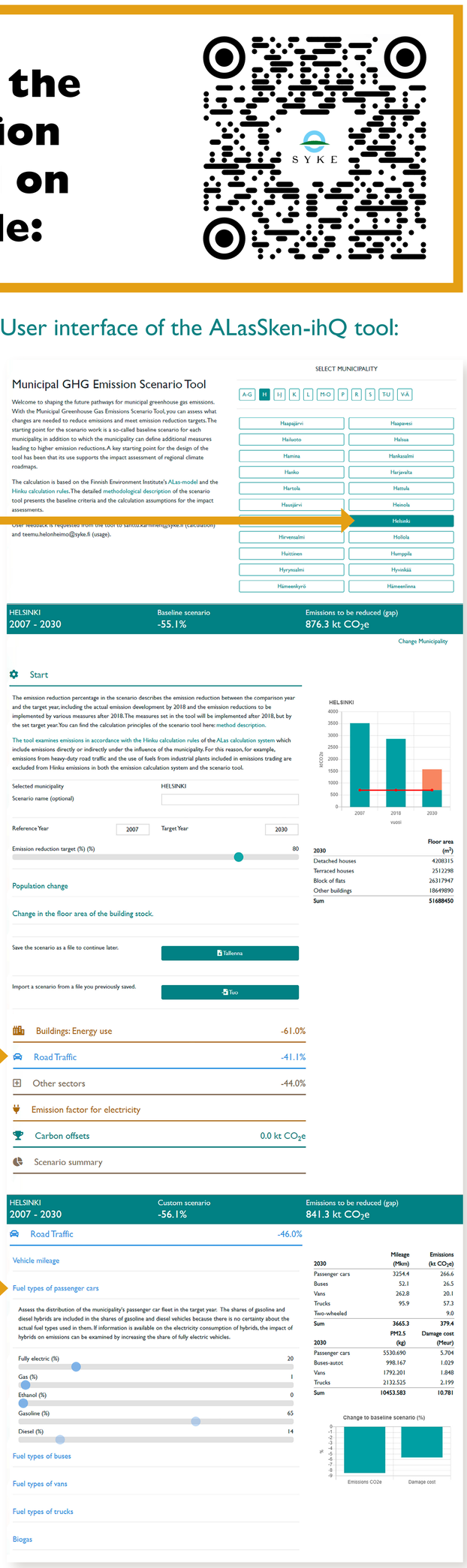
Short instructions

Select a **City**

The tool opens a Baseline city scenario 2030

You can study various additional measures on top of the Baseline

User interface of the ALasSken-ihQ tool:



Select **Road traffic**

There are sub-topics where you can find the measures

E.g. to study effect of electric cars, go to **Fuel types of passenger cars** and use the slider on fully electric

Scroll down on your mobile and you will see the effect on CO_2 emissions, $PM_{2.5}$ emissions and health damage costs due to $PM_{2.5}$

Methodologies

Modelling setup

Emission reductions > health improvement

- Studied emissions: primary $PM_{2.5}$ road traffic exhaust and non-exhaust
- Impacts and costs calculated using impact pathway approach

Simulated change in emissions ▶ Modelled change in concentrations ▶ Modelled population exposure ▶ Estimated health impacts and costs

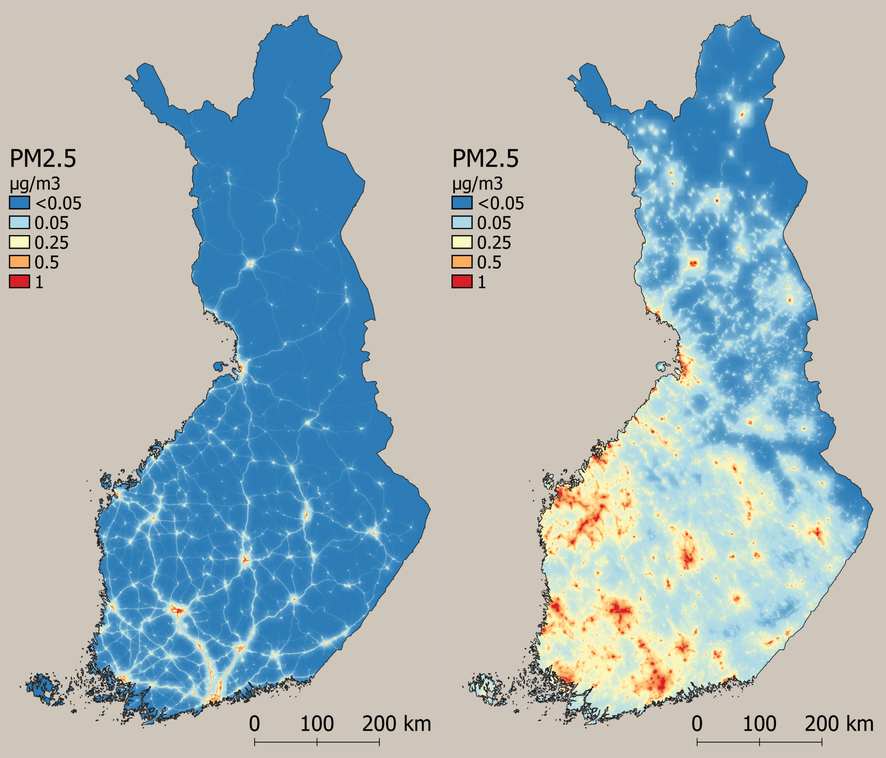
Emissions at 250 m spatial resolution

Dispersion modelling
- Source-receptor matrices based on UDM-FMI (250 m x 250 m)

Population data 250 m resolution

Health impacts
- Premature mortality
- Chronic bronchitis, asthma
- Hospital treatment (heart/respiratory diseases)
- Missed working days/reduced efficiency

Health valuation
- Nordic VSL (Value of Statistical Life) 3.5 M€



Modelled primary $PM_{2.5}$ concentrations Road traffic (left), Residential wood combustion (right). Source: Finnish Environment Institute SYKE.

More information about methodologies:

Kukkonen, J., Savolahti, M., Palamarchuk, Y., Lanki, T., Nurmi, V., Paunu, V.-V., Kangas, L., Sofiev, M., Karppinen, A., Maragkidou, A., Tiittanen, P., and Karvosenoja, N.: **Modelling of the public health costs of fine particulate matter and results for Finland in 2015**, Atmos. Chem. Phys., 20, 9371–9391, 2020.

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syke.fi/emissionmap **syke.fi/projects/fres** **ihq-demo-harmo.netlify.app**

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