



Heat mapping & district heating simulation tool

Speaker:

ir. Pedro Pattijn
Directory innovation & sustainability
Ingenium nv

Authors:

ir.arch. Joris Dedecker
ing. Raf De Herdt
ir. Thomas Koch

Agenda

- Introduction
- Heat mapping tool
- District heating tool

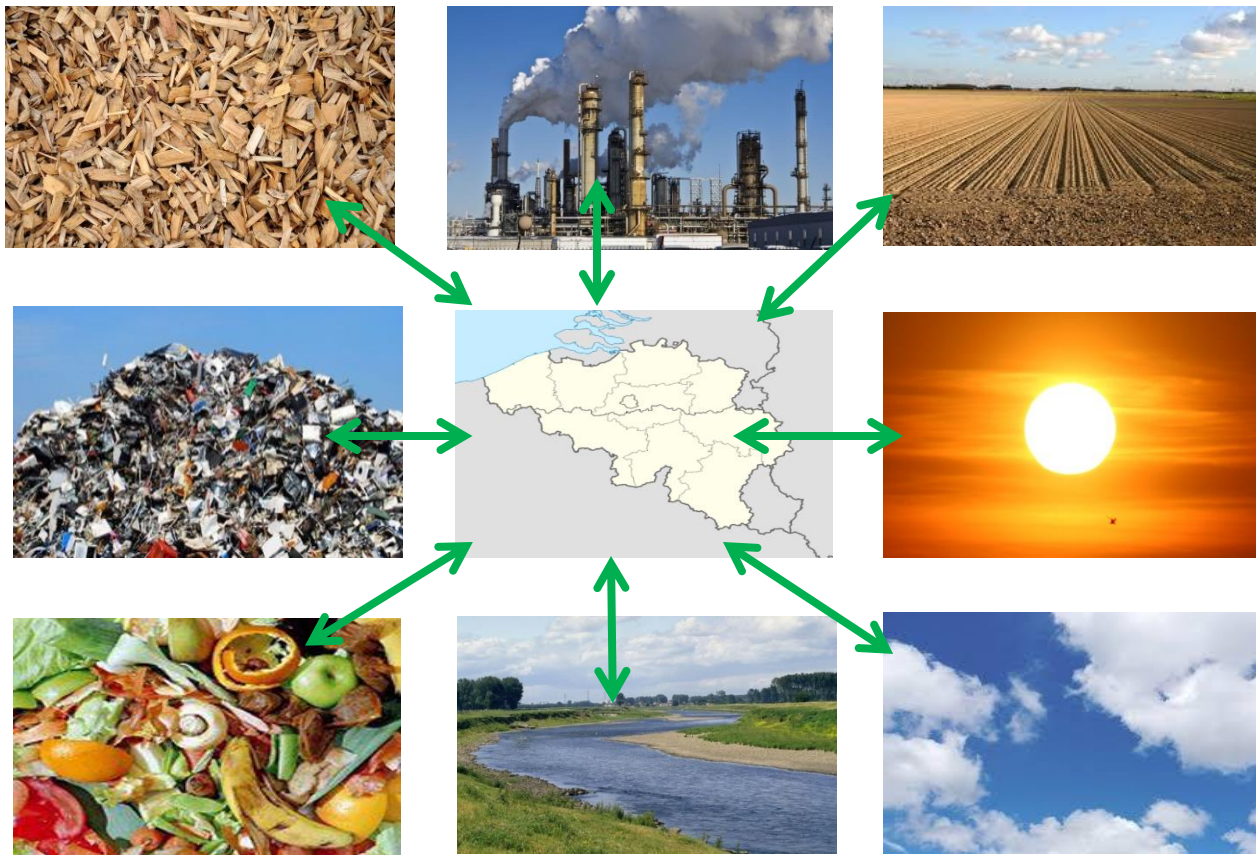
Introduction



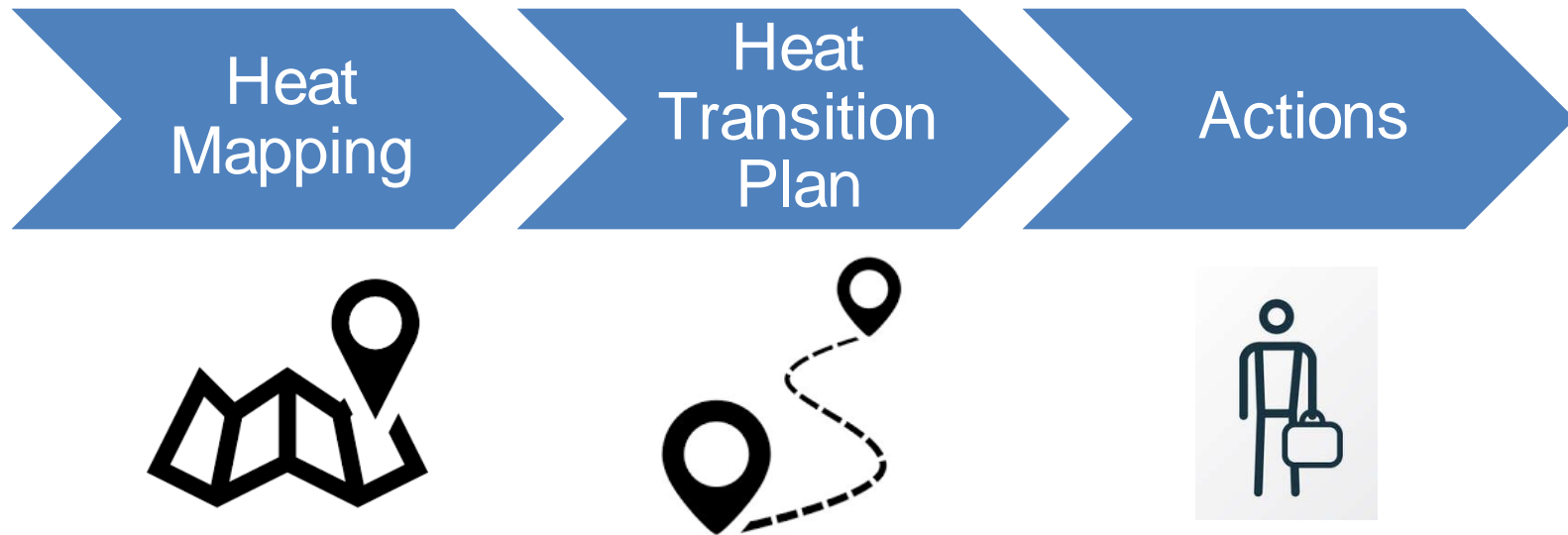
Introduction



Introduction



Introduction



Introduction

	MIN/HOUR	DAY	MONTH/YEAR
Installation			
Building			
Network/Grid			
District/Zone	District Heating		Heat Mapping

Diagram illustrating the relationship between different scales and components in a district heating simulation tool:

- The table shows four scales: MIN/HOUR, DAY, and MONTH/YEAR.
- Components are listed in rows: Installation, Building, Network/Grid, and District/Zone.
- Arrows indicate relationships:
 - A downward arrow connects the MIN/HOUR column (Building row) to the District Heating cell (District/Zone row).
 - A downward arrow connects the MONTH/YEAR column (Building row) to the Heat Mapping cell (District/Zone row).
 - A horizontal double-headed arrow connects the District Heating cell and the Heat Mapping cell.

Heat mapping

Why? **Input for heat Transition plans for (local) governments**

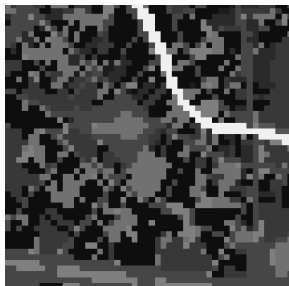
What? **Collective vs Individual heating**

How ? **Cost-model with simulation of**

- **Heat demand**
- **Heat supply**

Heat mapping > Heat demand

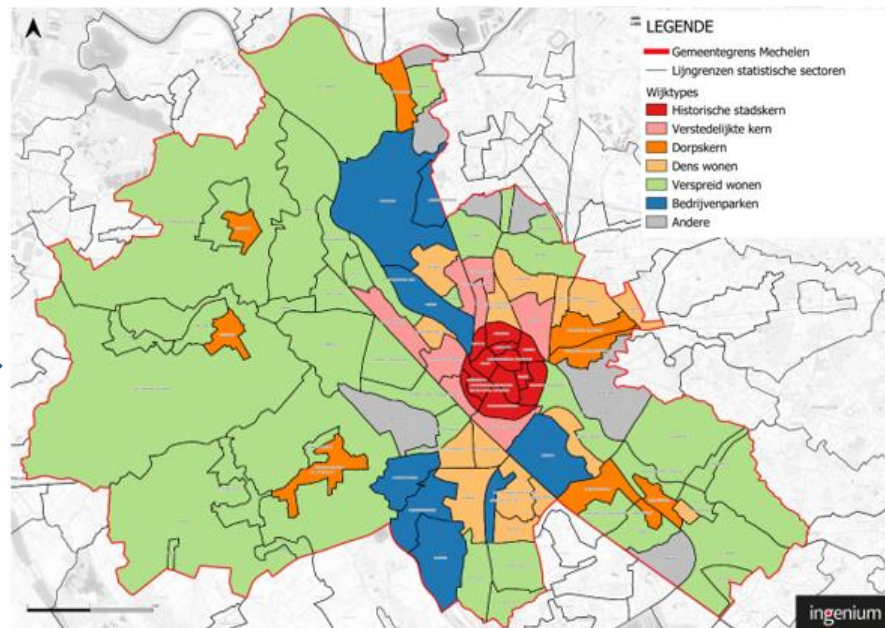
Land use



Topology



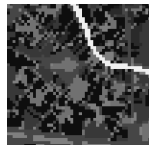
Building
typology



Zone typology
(aggregated)

Heat mapping > Heat demand

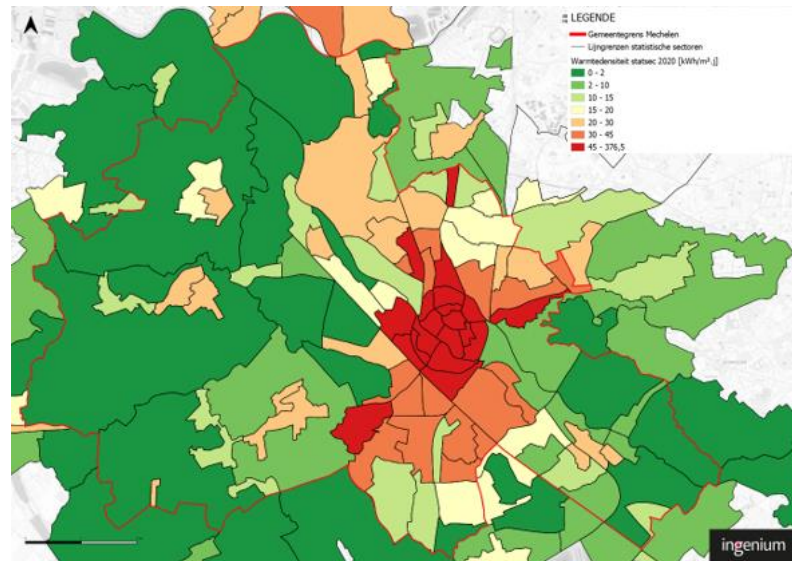
Building typology



Heat demand (street)



Heat demand buildings
(current)



Heat demand zone
(current)

Heat mapping > Heat demand

**Heat demand buildings
(current)**

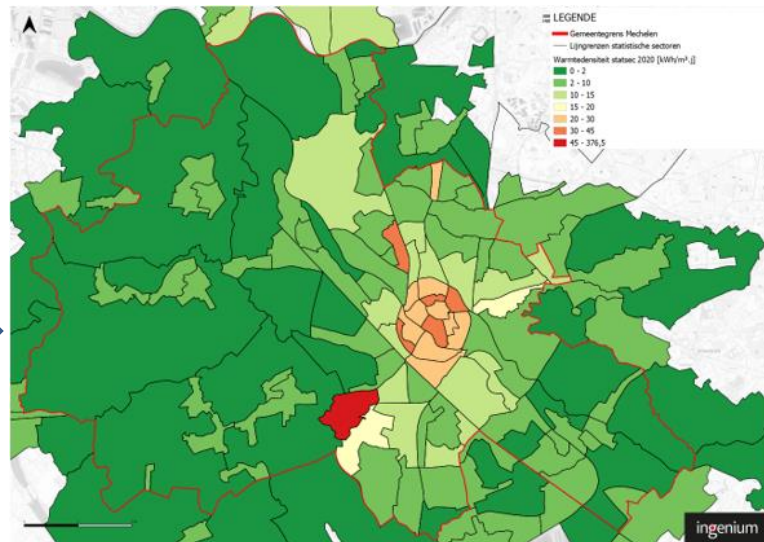


Construction year

Renovation potential
(linked to building type and
construction year)

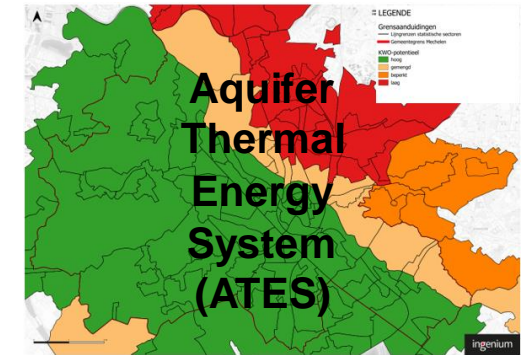
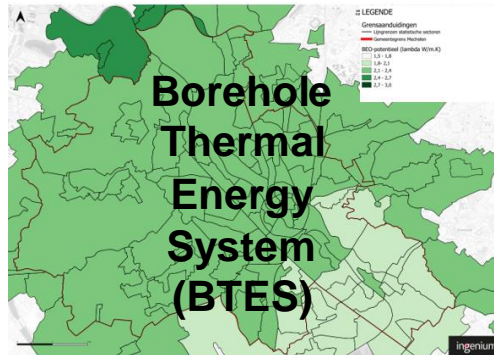
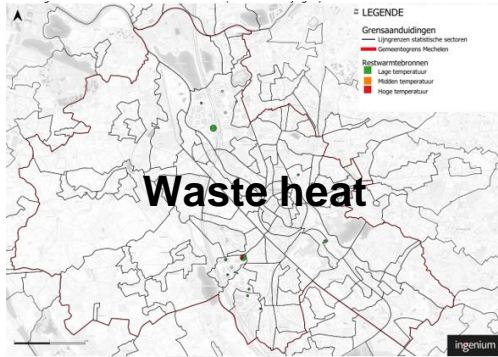


**Heat demand
buildings
(renovated)**



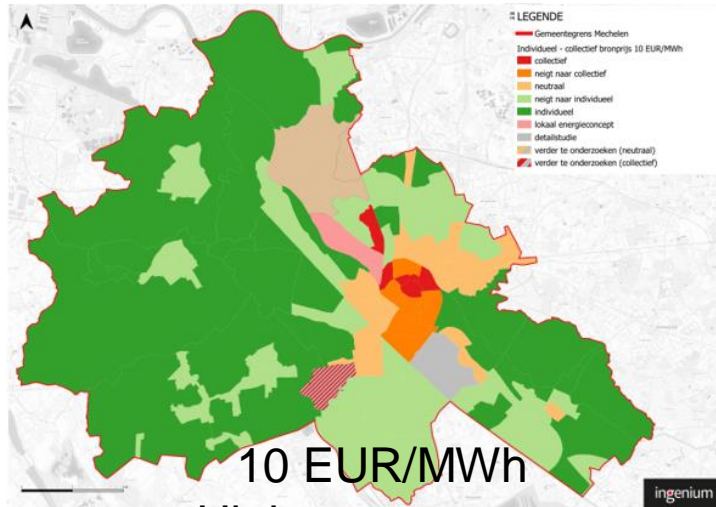
**Heat demand zone
(future)**

Heat mapping > Heat supply

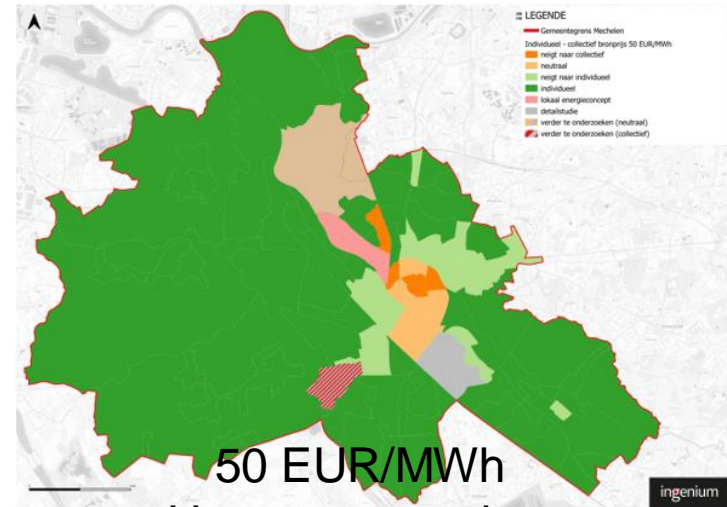


Heat mapping > Output

- Cost model
- Sensitivity analysis: heat source price (district heating)



10 EUR/MWh
High temperature
waste heat



50 EUR/MWh
Heat pump on low
temperature source

Heat mapping

Next steps :

- Detailed open data (cfr CityGML) for detailed simulation of:
 - heat demand
 - renovation potential
- Adding in of user characteristics for
 - heat demand
 - renovation/adaptation speed

District heating

Why? **Roll out of district heating**

What? **Tool for feasibility and design study**

How ?

Sizing with simulation of :

- **Pressure drop**
- **Heat Loss/Temperature drop**
- **Speed**

Cost-model with :

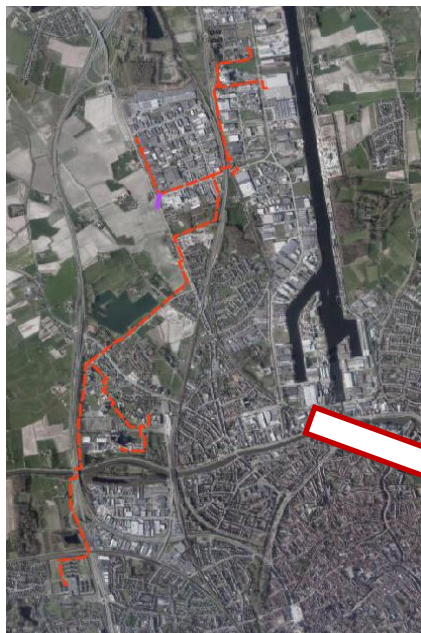
- **CAPEX/OPEX**
- **TCO**
- **Heat pricing**

District heating

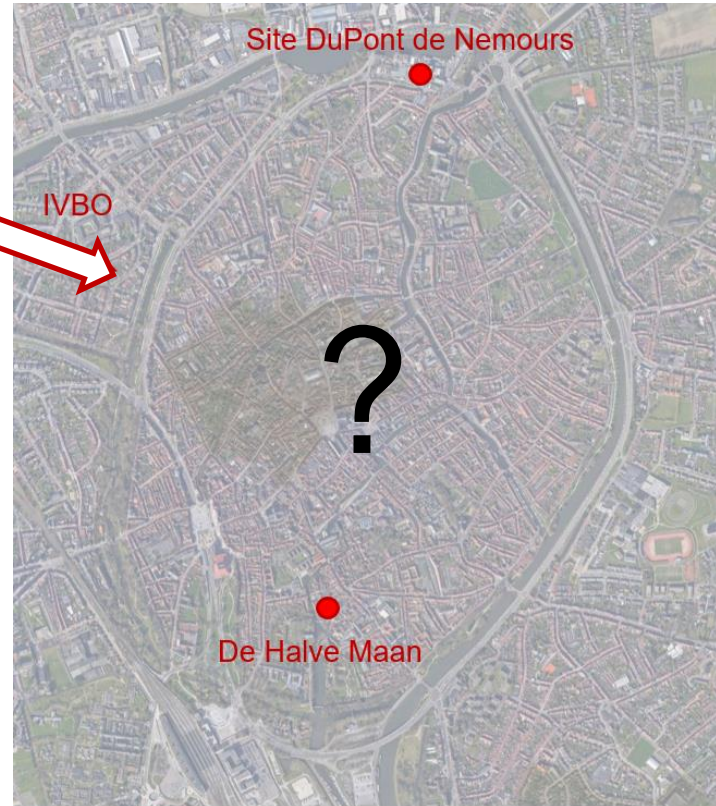
Incineration IVBO



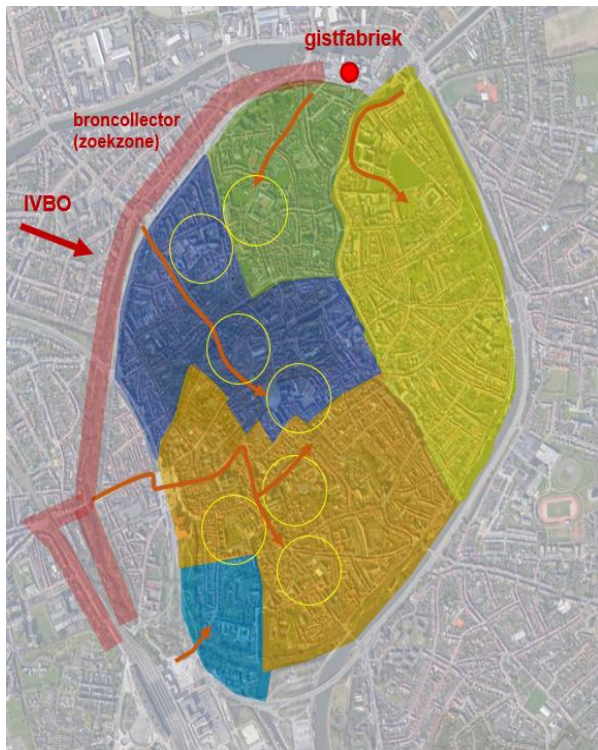
120 °C
34 MW
200 GWh/y



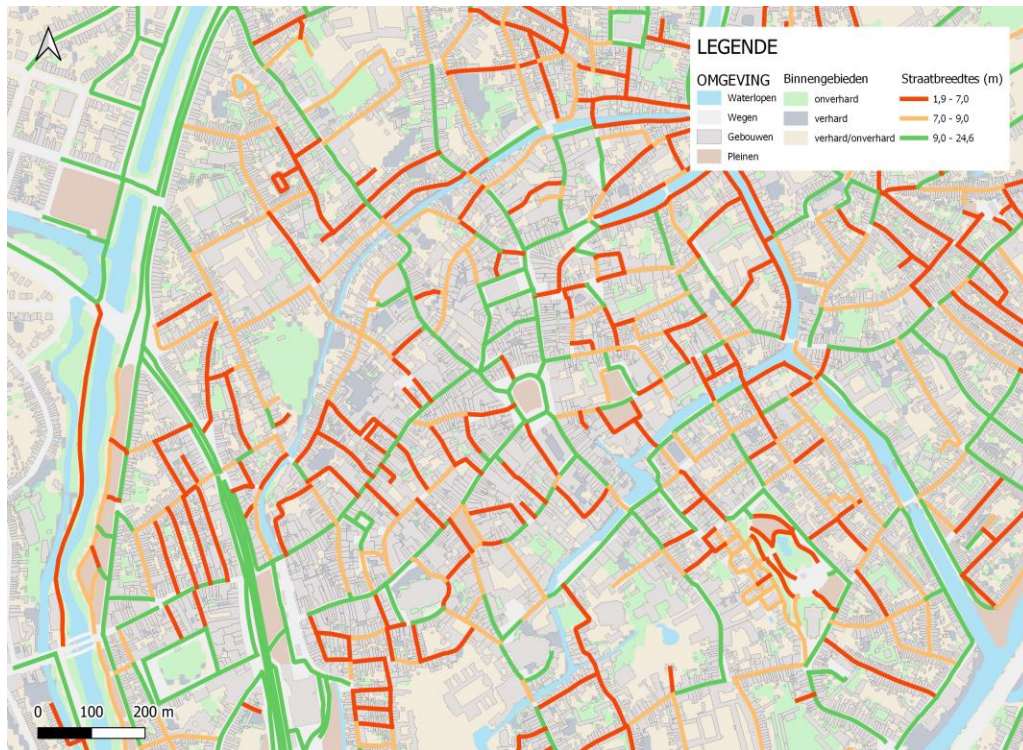
Existing district
heating network
15 km



District heating

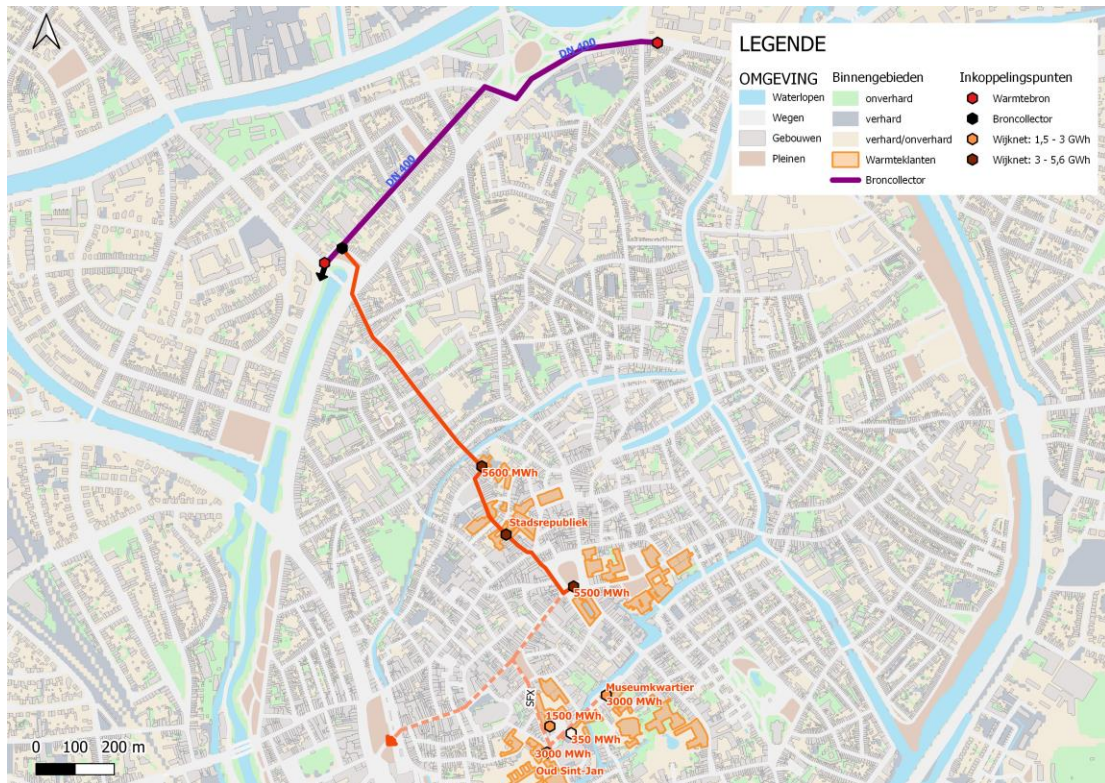
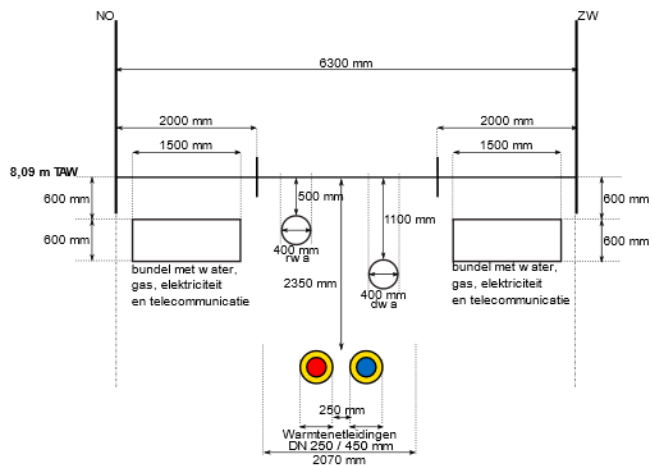


Ingenium streetwidth tool



District heating

Ingenium sizing tool





Heat mapping & district heating simulation tool

Questions and Comments

Speaker:

ir. Pedro Pattijn
Directory innovation & sustainability
Ingenium nv

Contacts:

(+32)(0) 479951750
pedro.pattijn@ingenium.be