



Funded by the Horizon 2020 program
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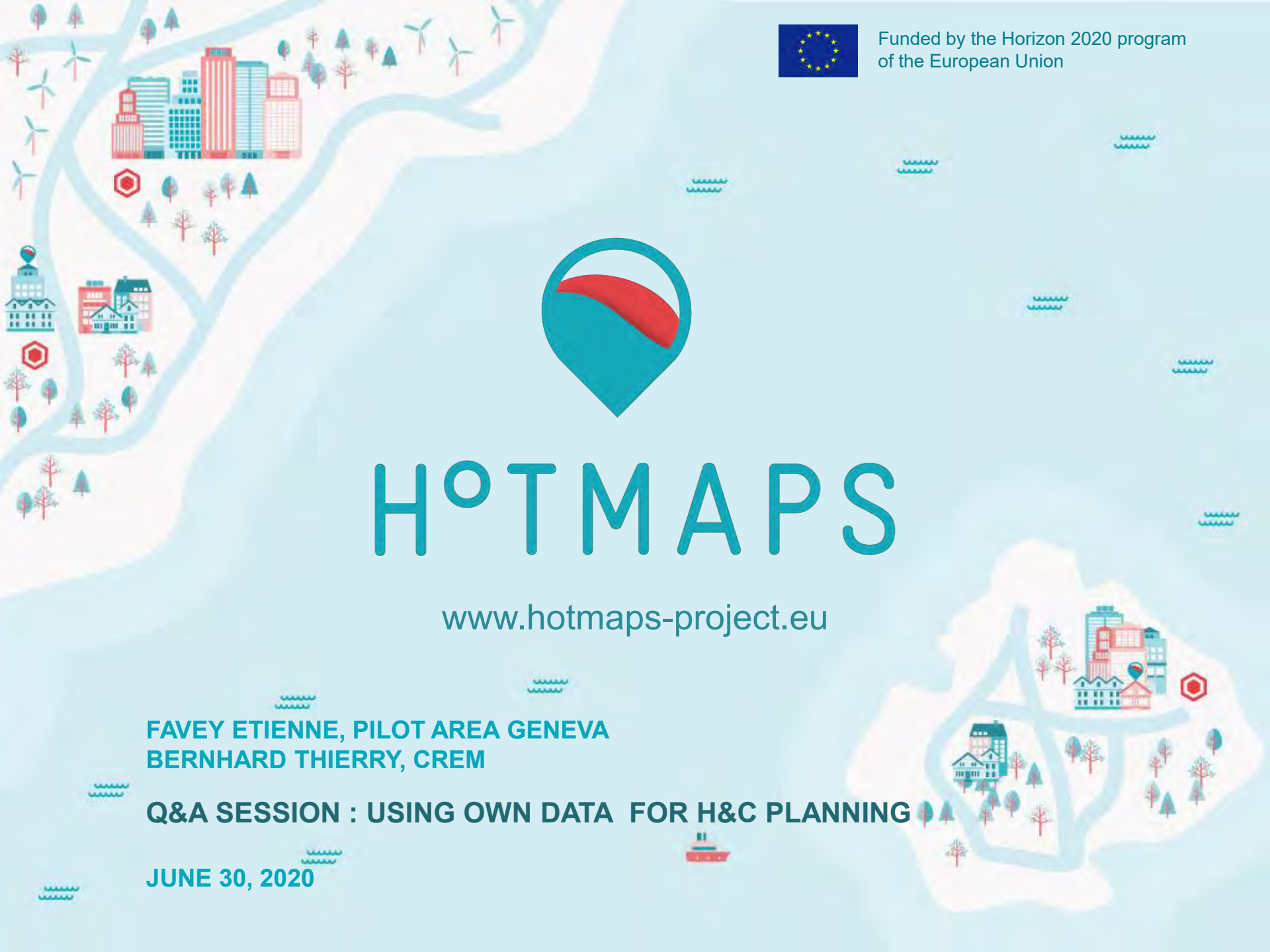
H^oTMAPS

www.hotmaps-project.eu

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Q&A SESSION : USING OWN DATA FOR H&C PLANNING

JUNE 30, 2020





Background

The city of Geneva, has to realize its own **territorial energy planning**, based on the *cantonal energy master plan*, proposed by the Cantonal Energy Agency (OCEN) and on the *Cantonal Climate Plan*.

3 priority targets

- Controlling and reducing energy demand
- Developing local non-fossil energies
- Planning energy infrastructures



H^oTMAPS

A high-performance geo-referenced information system





Geneva planning roadmaps

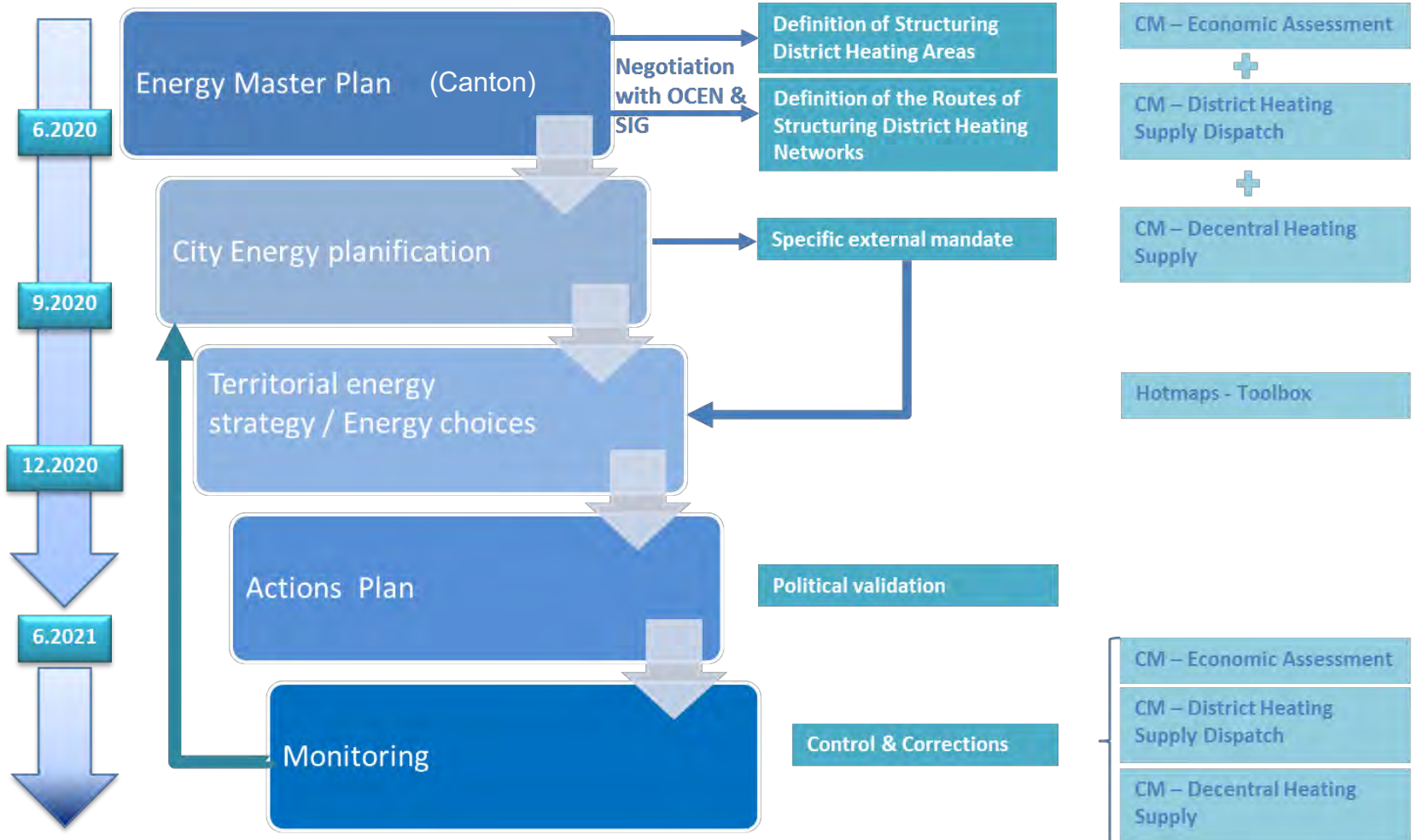


Planned
Hotmaps uses

Timeline

Main steps

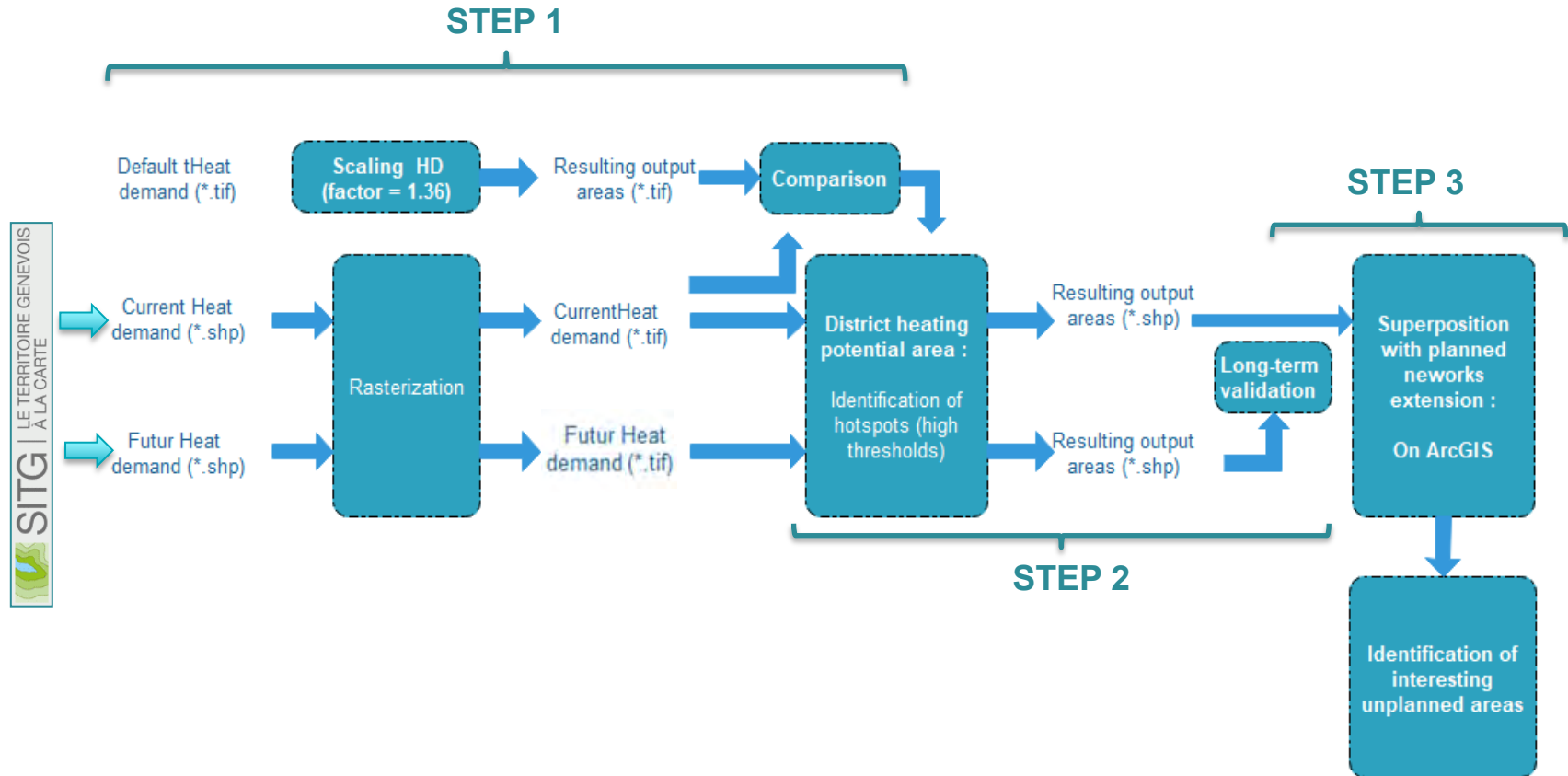
Issues





Using own data – step by step

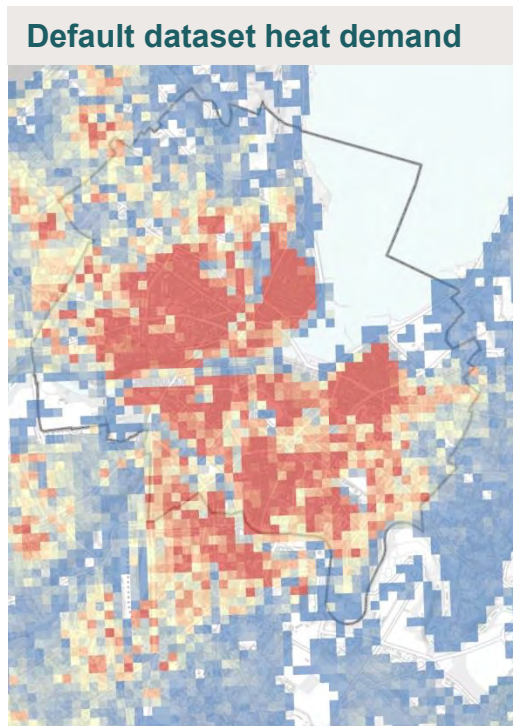
DH hotspots identification



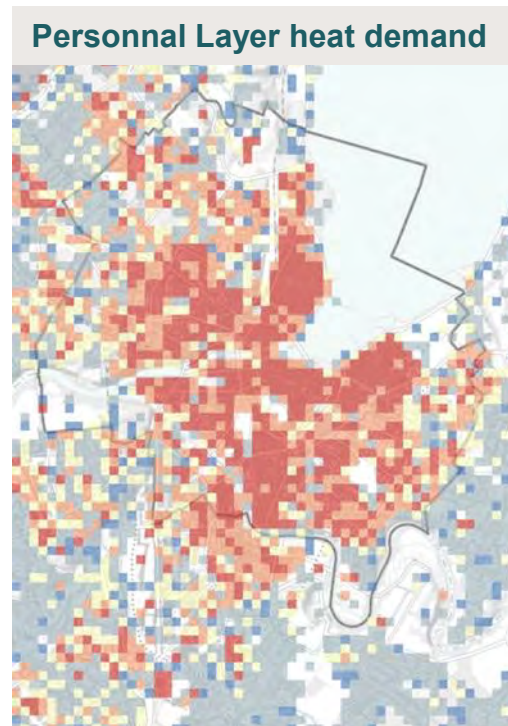


Using own data – step 1

Change the heat demand reference



- Scaling Heat demand, factor 1.36

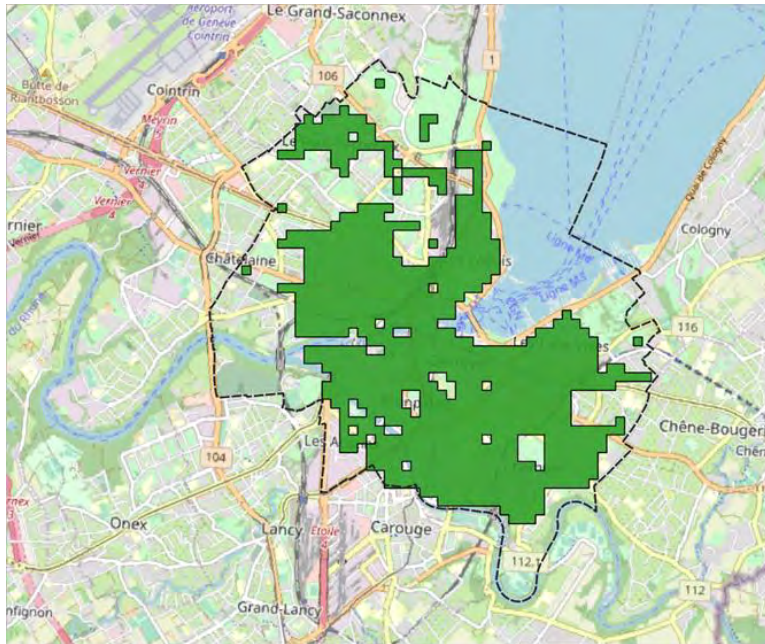
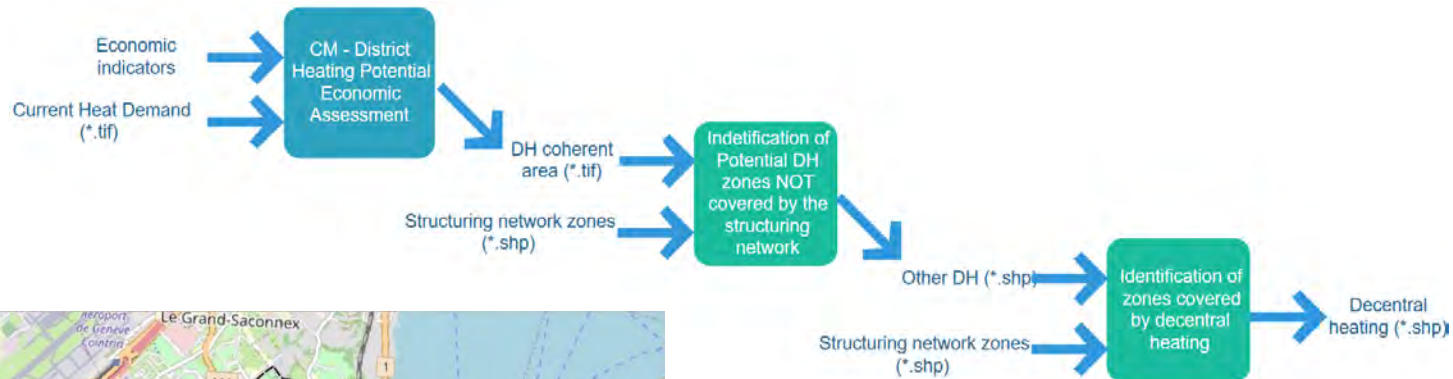


- Using current (2015) heat demand layer (vector)
- Rasterization in a .tif picture
- Using as the reference heat demand map in the Toolbox



Using own data – step 2

Definition of coherent district heating supply areas



Identification of the most interesting area for DH -> push costs to the max in the module :

- Cost ceiling: 15 EUR/MWh
- Construction cost constant: 10'000 EUR/m
- Construction cost: coefficient 25'000 EUR/m²
- Interest rate: 5%



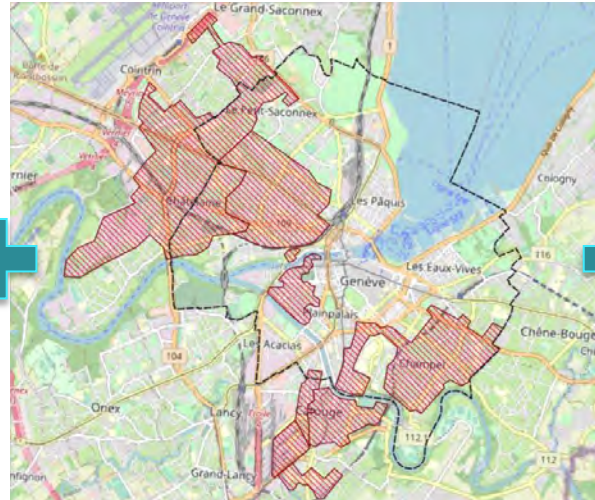
Using own data – step 3

Overlay of planned networks extensions & non HD areas

Structuring Networks Areas

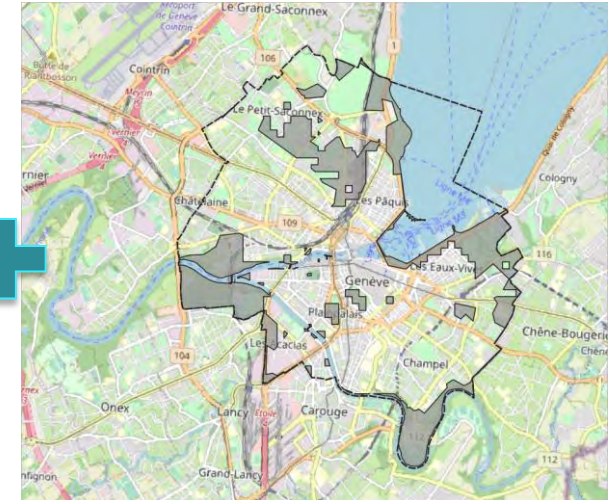


Low-temperature structuring networks GeniLac



High-temperature structuring networks

Decentral heating area

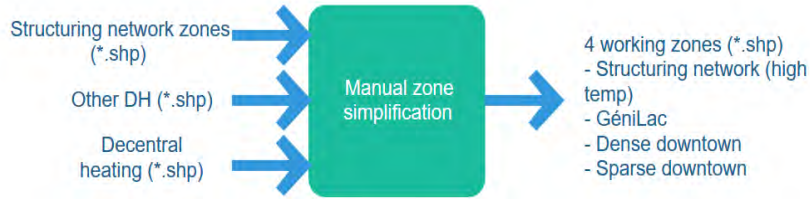


Insufficiently dense areas for DH

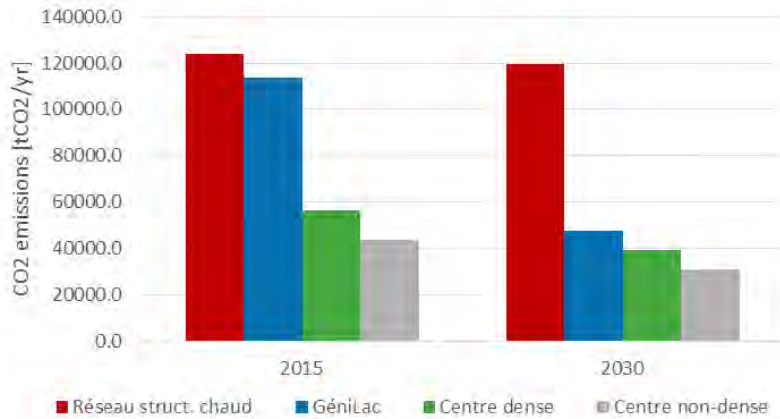


Using own data – step 3

Manual simplification

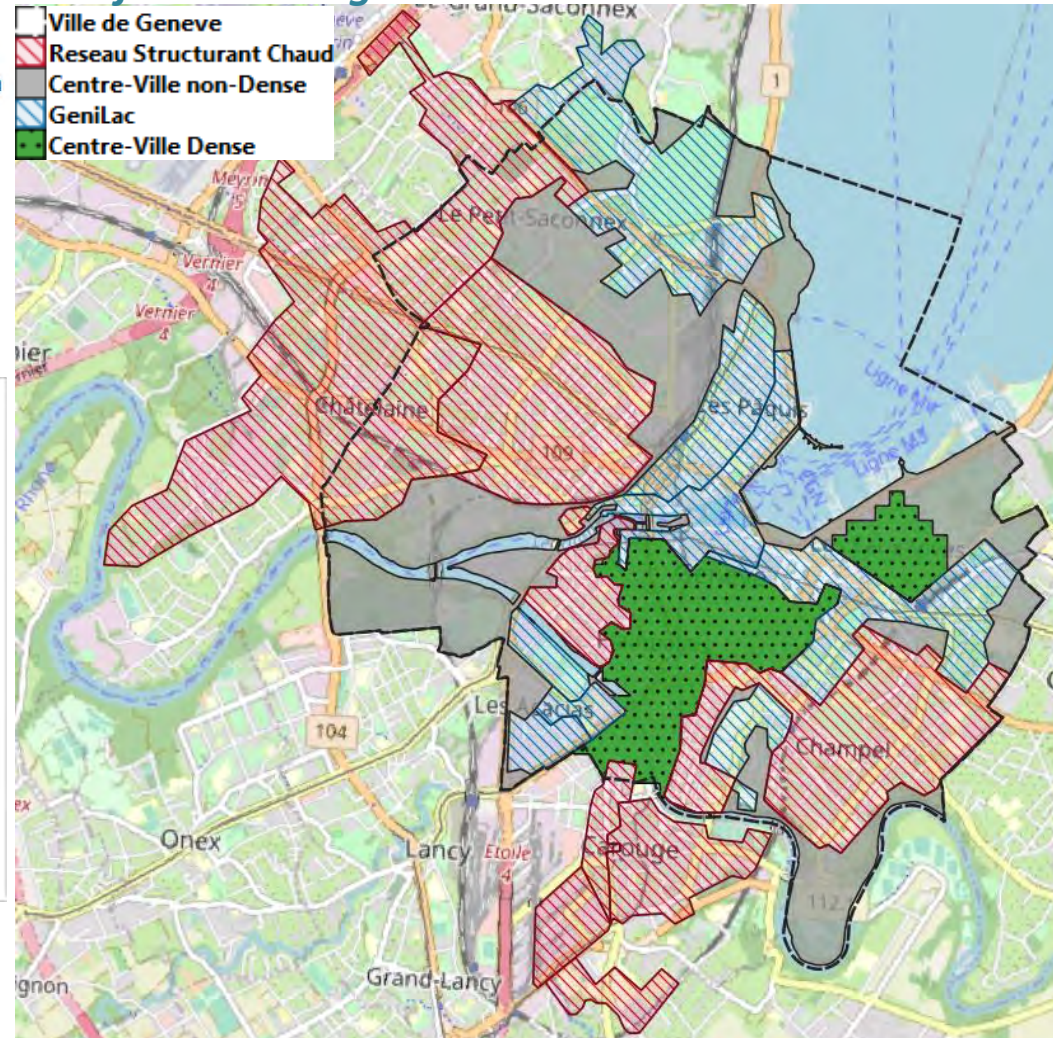


Total CO2 emissions per year



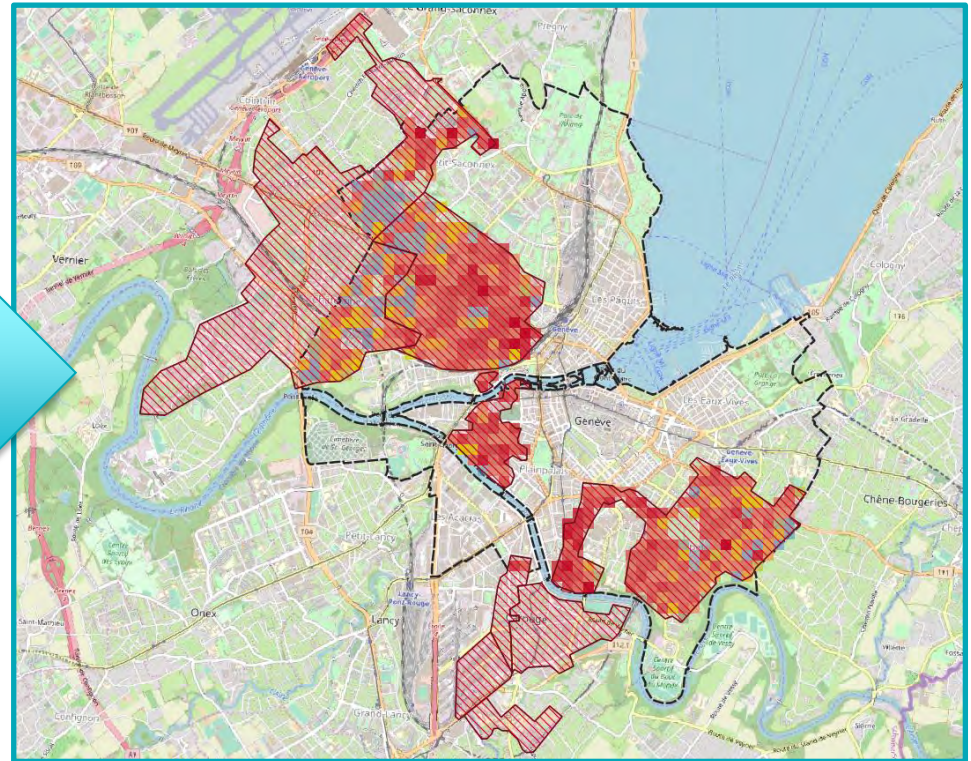
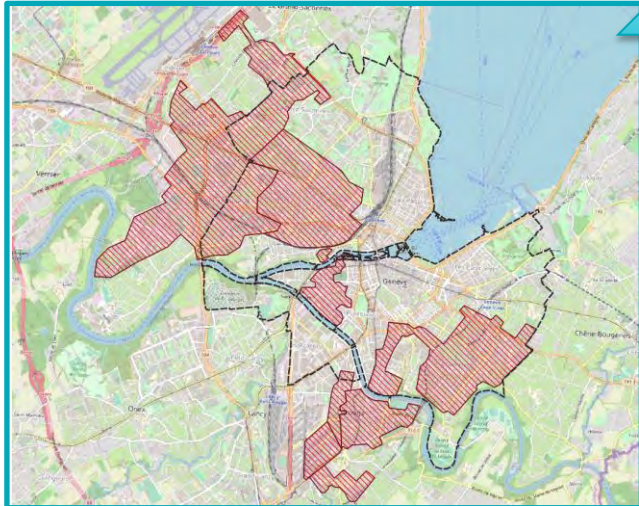
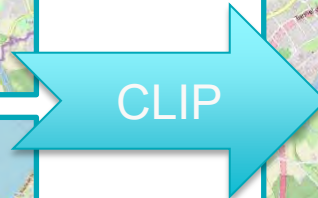
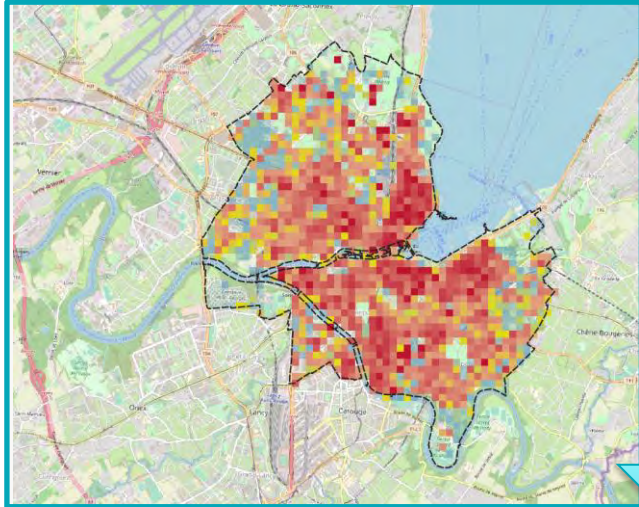
Example of results on a BAU scenario

Final four working areas



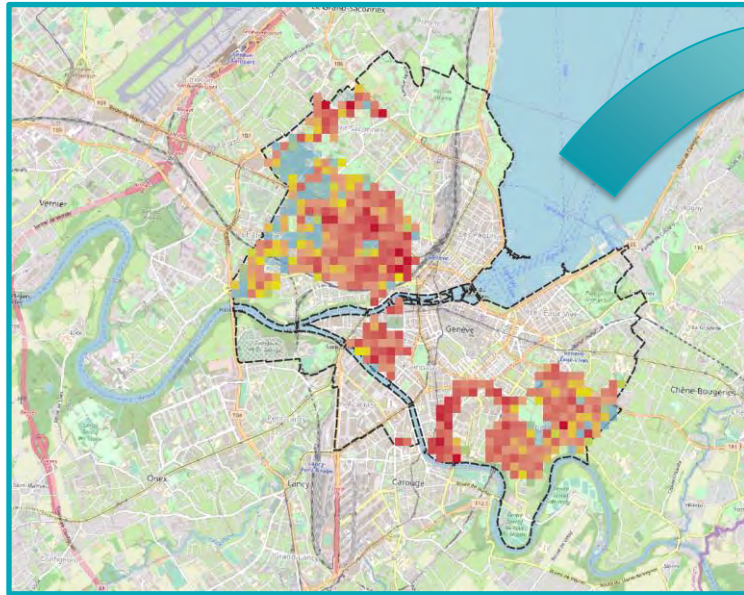


Heat demand for segmented territory analysis with Hotmaps: *.tif layer creation

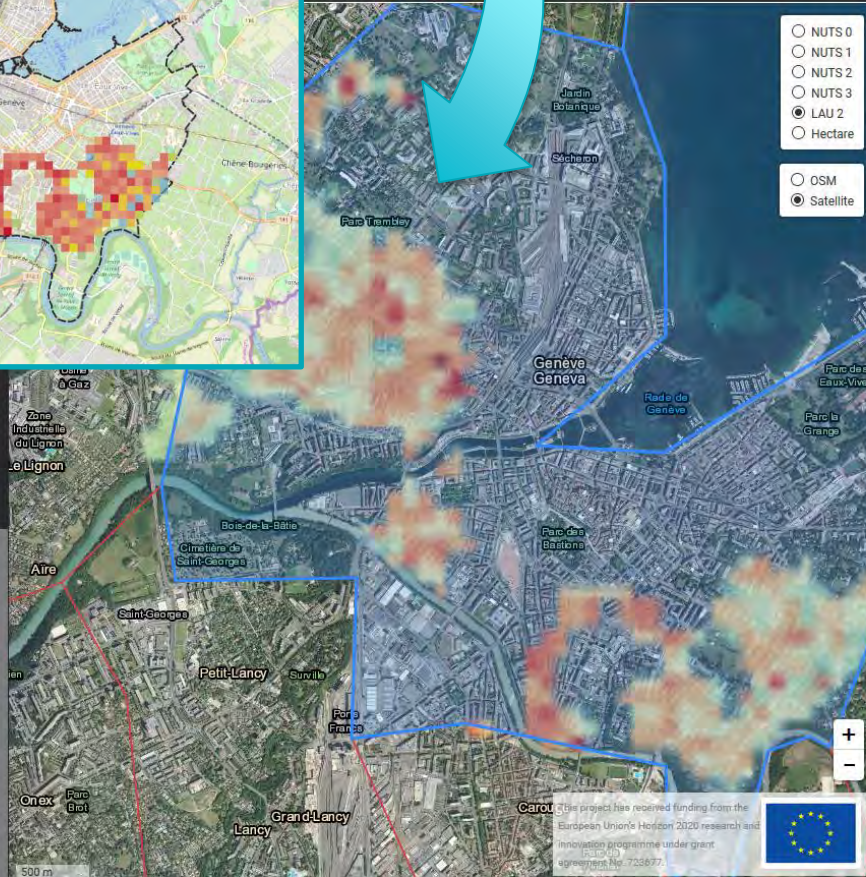




Heat demand for segmented territory analysis: DH supply dispatch tool example



*50%



invest mode - (value: dispatch)
dispatch ▾

BASIC INPUTS +
ADVANCED INPUTS: (LEVEL 1) +
ADVANCED INPUTS: (LEVEL 2) +

INPUT TYPE SELECTION
Type: heat
reseau_struct_chaud_50percent_curre +

INPUT TYPE SELECTION
type: nuts_id_number
nuts_id_number +

RUN CM

Overall

INDICATORS GRAPHICS

INFORMATION	VALUE
CM - DISTRICT HEATING SUPPLY DISPATCH	
Total LCOH	102.71 EUR/MWh
Annual Total Costs	39.86 M EUR/yr
Total Revenue From Electricity	4.68 M EUR/yr
Total Thermal Generation	342.53 GWh/yr
Total Electricity Generation	107.53 GWh/yr
Total Investment Costs	16.68 M EUR/yr
Total O&M Costs	5.78 M EUR/yr
Total Fuel Costs	2.52 M EUR/yr
Total CO2 Costs	13.18 M EUR/yr
Total Ramping Costs	1.69 M EUR/yr
Total CO2 Emissions	65.9 k t/yr
Total Heat Demand	342.53 GWh/yr
Total Final Energy Demand	560.43 GWh/yr

500 m

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Average building type estimation for single run with Decentral heating tool

Individual building details:

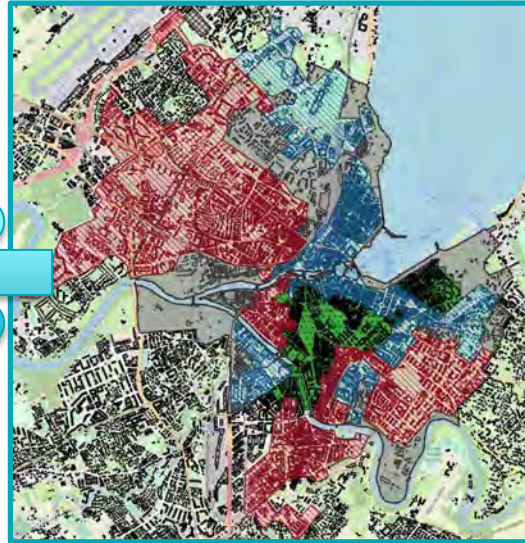
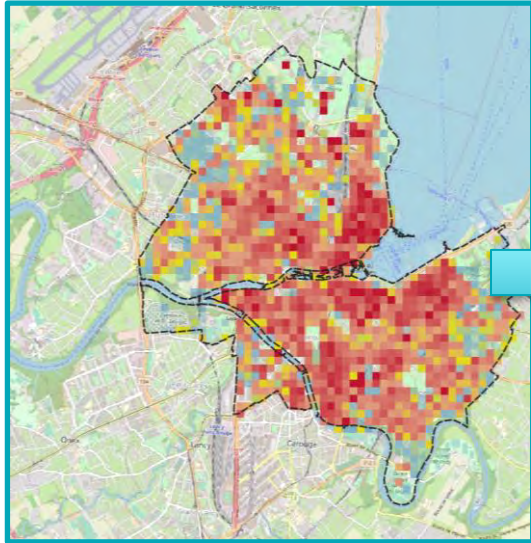
Area, floors number, Zone ID, etc...

$$\text{Total GFA} = \sum \text{area} * \text{floors}$$





Average building type estimation for single run with Decentral heating tool



Average
heat density
per m2



Hotmaps
CH
Building Stock

