

A Multi Criteria Analysis (MCA) for the Positioning of integrated infrastructures

Smart city talks, Webinar 17/07/2020

Pietro Zambelli - EURAC



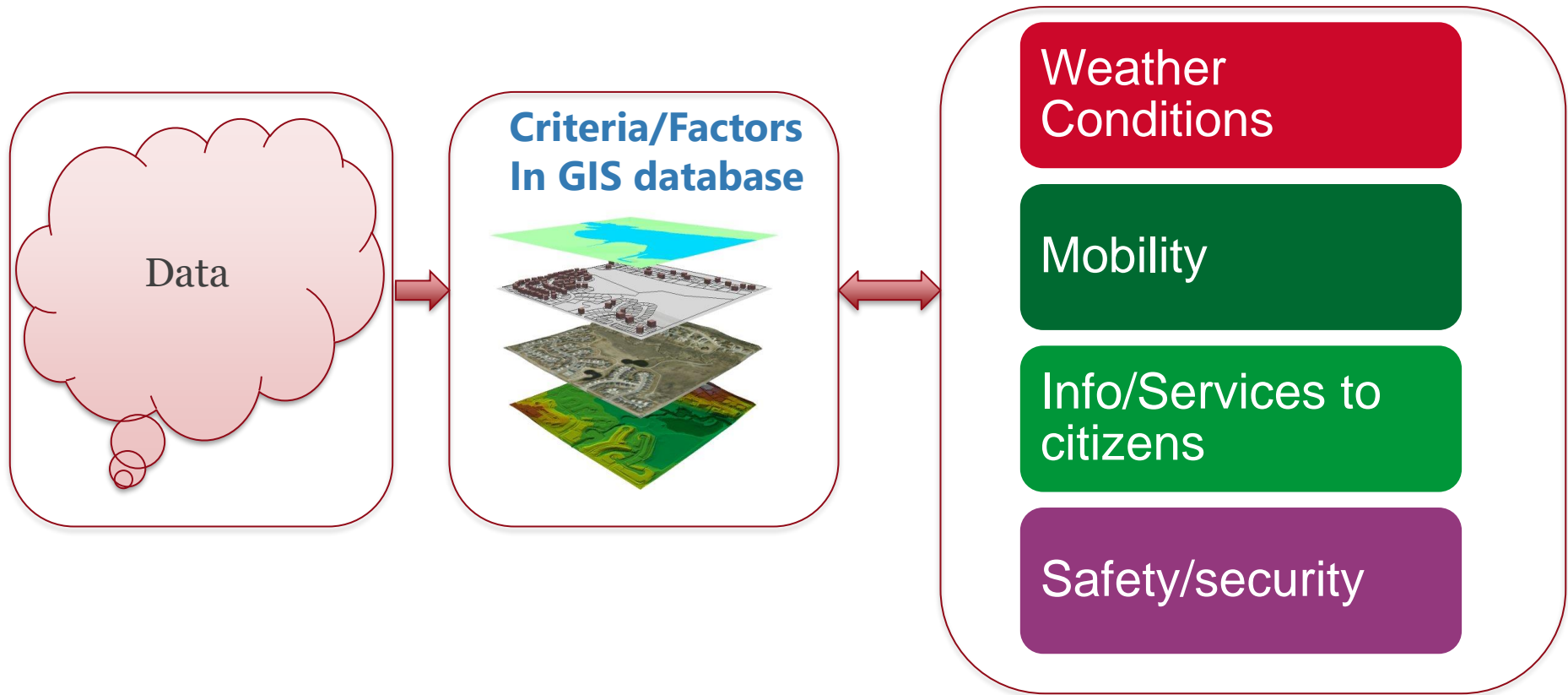
This project has received funding from the European Union under the Horizon 2020 research and innovation programme.

Content



- Methodology
- 4 main criteria and services considered
- MCA

Modelling approach for the optimal location of smart points



List of services and sensors for each thematic area

Weather Conditions

Solar irradiation, humidity, temperature, precipitation and pressure

Mobility

Air quality (NO_x, PM),
Congestion monitoring;
Occupancy of parking lots
Electric vehicle charging stations
Info displays for traffic routing
Carplates identification for routing monitoring
Innovative tracking systems (i.e. bluetooth)

Modelling approach for the optimal location of smart points

Info/services to citizens



Info displays for pedestrians in center, commercial areas or App (public transport info, car sharing, weather forecast, cultural news);
Availability of parking lots;
Cell phone chargers;
Internet connection in public spaces (SINFONIA buildings);
Lightening of public spaces;
Smart payment Services (South Tyrol Pass, smart cards)

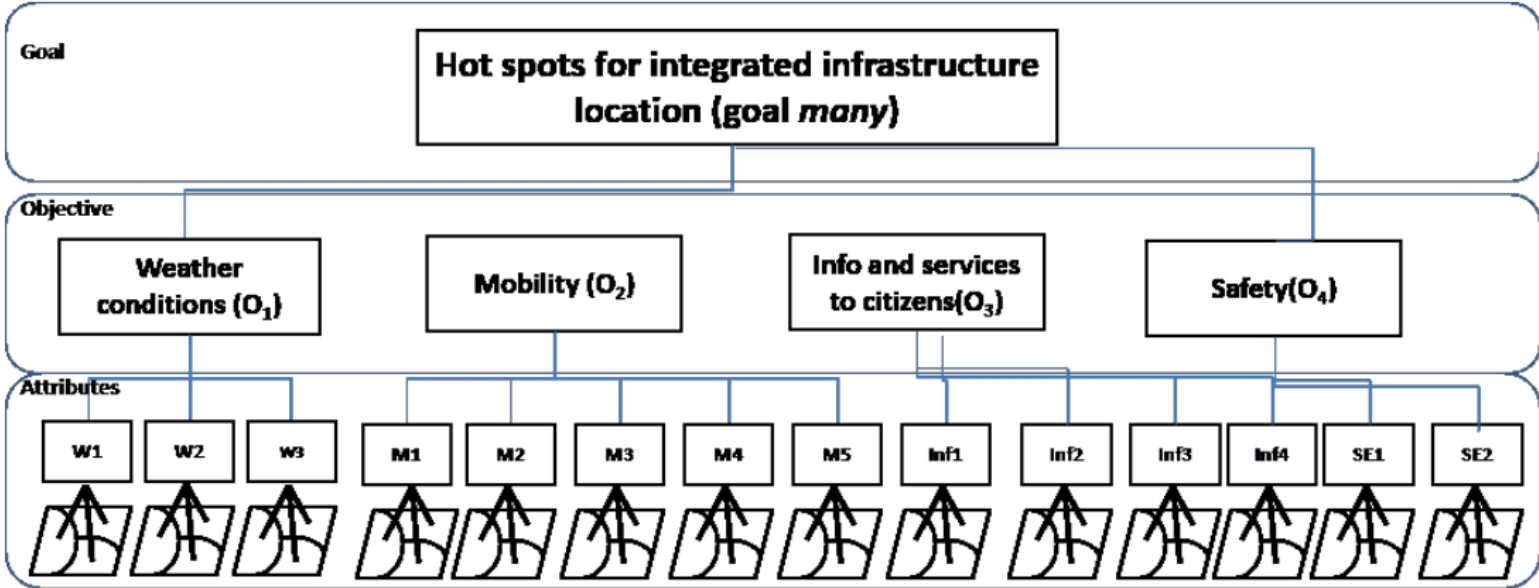
Safety/Security



SOS points and cameras

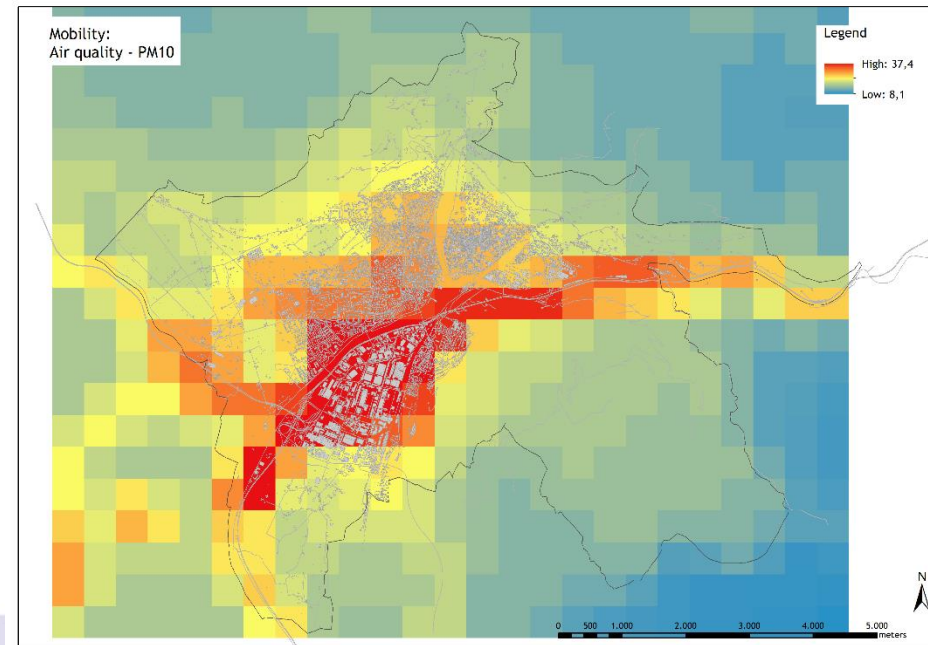
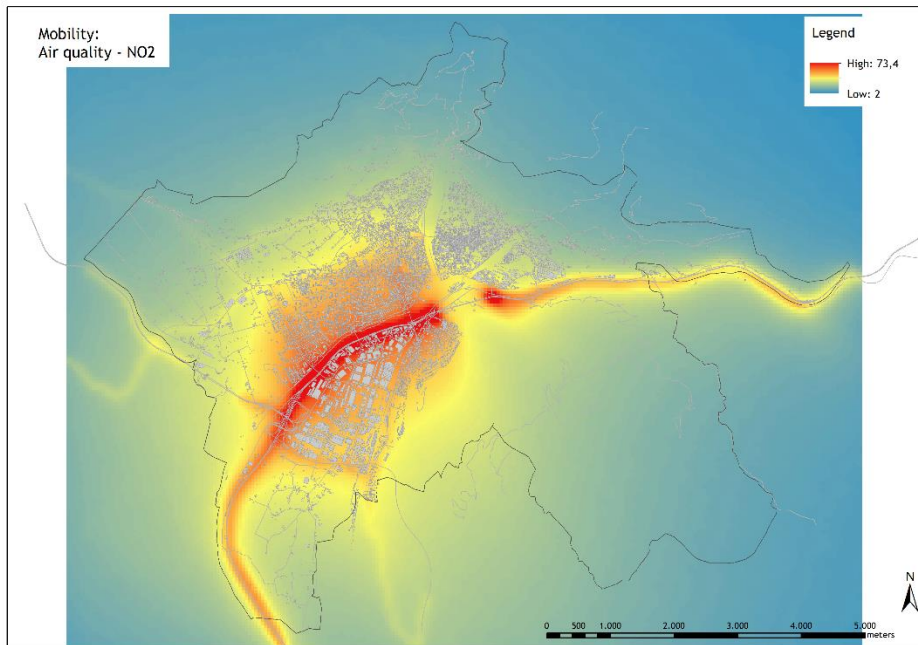
The services were distributed among the stakeholders to assign a weight to be included in the MCA analysis.

For the MCS we used the Analytical Hierarchy process-oriented Weighted Average (AHO-OVA)

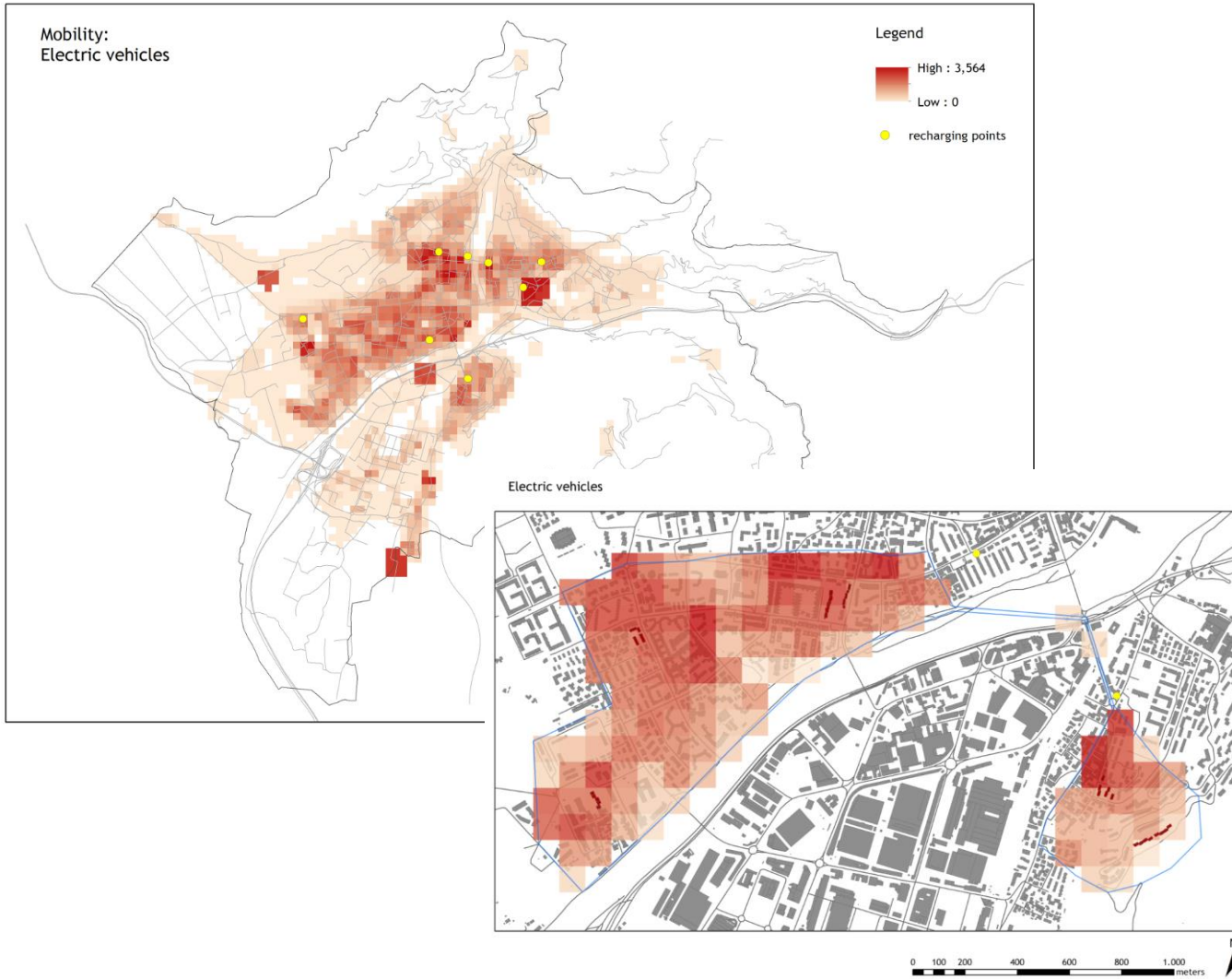


Mobility: Air Quality

Map with the Air Quality provided by CISMA



Mobility: EVs



JRC SCIENCE AND POLICY REPORTS

Optimal allocation of electric vehicle charging infrastructure in cities and regions

Dimitrios Giannopoulos^{1,2}
Yannis Drossinos¹
Aljona Zubovych¹
Pietro Zambelli¹
Penelope Dilina^{1*}
Christian Thiel¹

2016

JRC Science and Policy

Report EUR 26461 EN

This block contains the title page of a report. At the top is the European Commission logo. Below it, the text reads 'JRC SCIENCE AND POLICY REPORTS'. The main title is 'Optimal allocation of electric vehicle charging infrastructure in cities and regions'. The authors listed are Dimitrios Giannopoulos, Yannis Drossinos, Aljona Zubovych, Pietro Zambelli, Penelope Dilina, and Christian Thiel. The year '2016' is also present. Below the text is a map of a city area with several blue pins indicating recharging points. A green shaded area is also visible on the map. At the bottom right, there is a small logo for 'JRC Science and Policy' and the text 'Report EUR 26461 EN'.

Mobility: Congestion monitoring

Legend

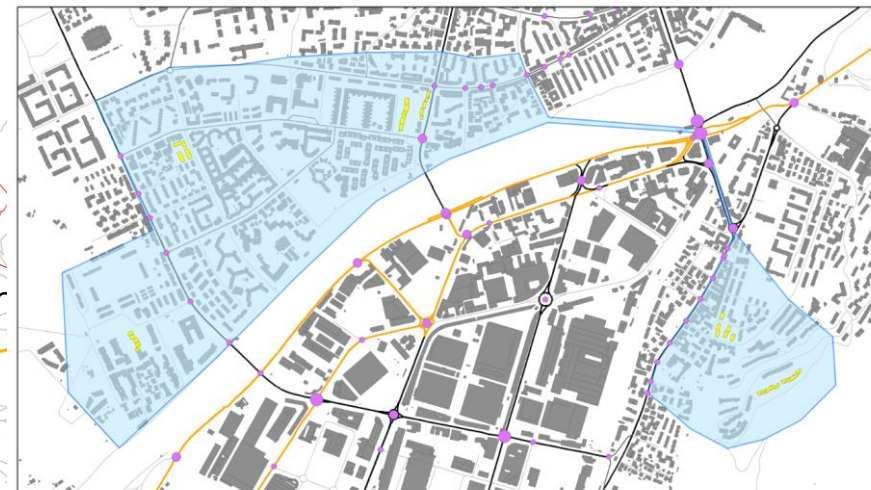
roads classes

- highway (no fee)
- urban main roads
- urban secondary roads

roads crosses

- low congestion
- medium congestion
- high congestion

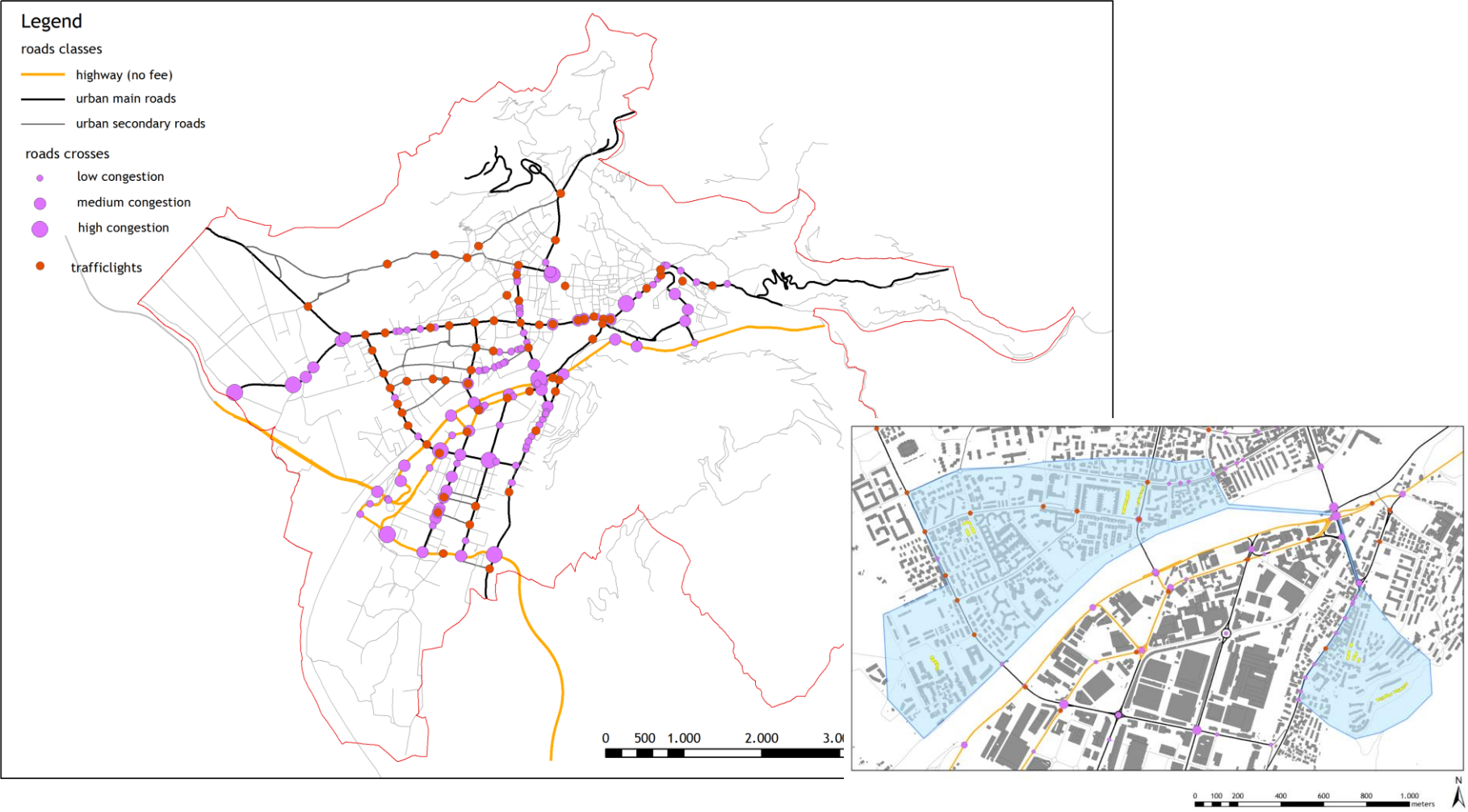
Congestion monitoring (1)



0 500 1.000 2.000 3.000 4.000 5.000 meters



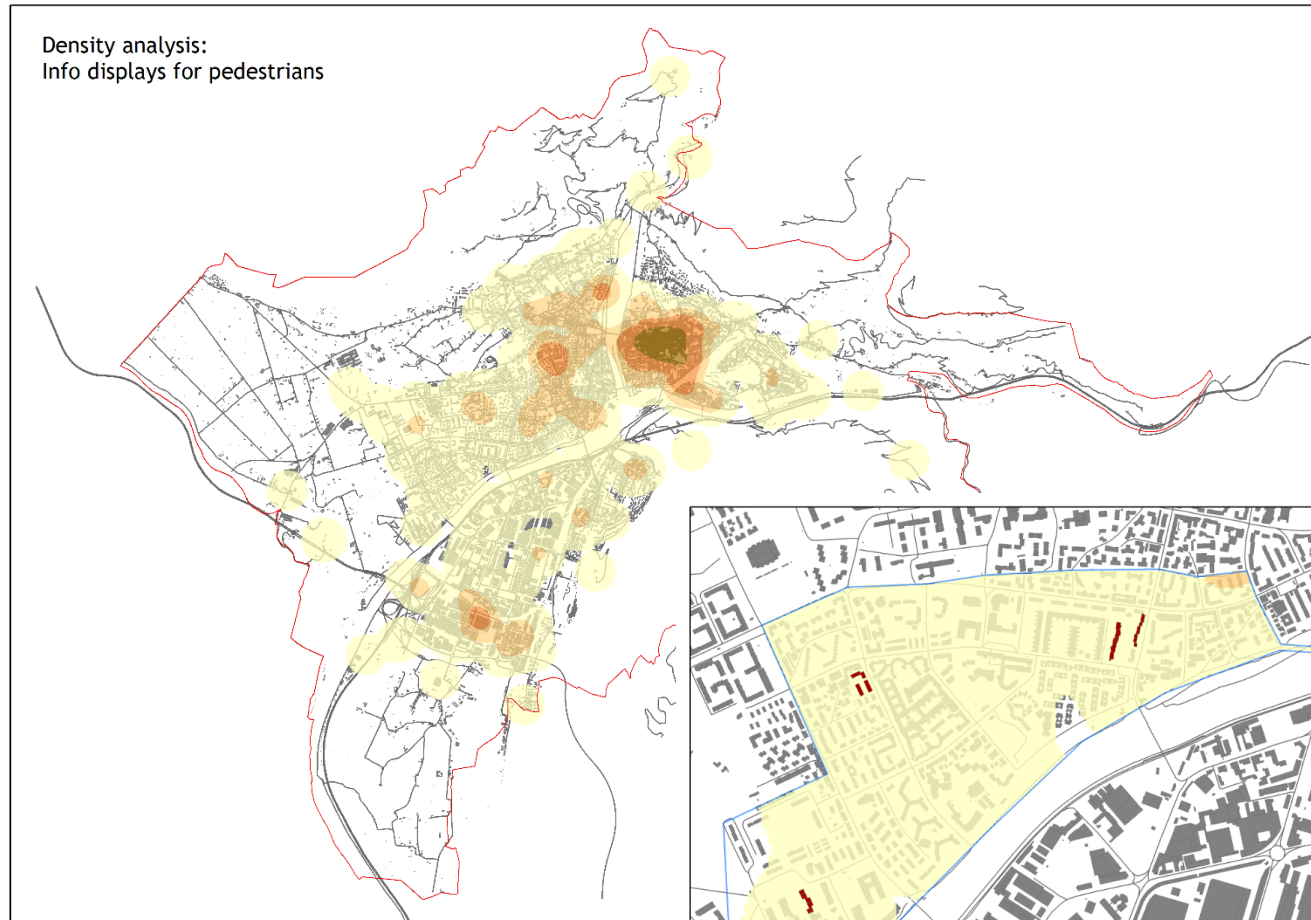
Mobility: Displays for traffic routing



Info/Services to citizens

INFO DISPLAYS FOR PEDESTRIANS IN CENTER

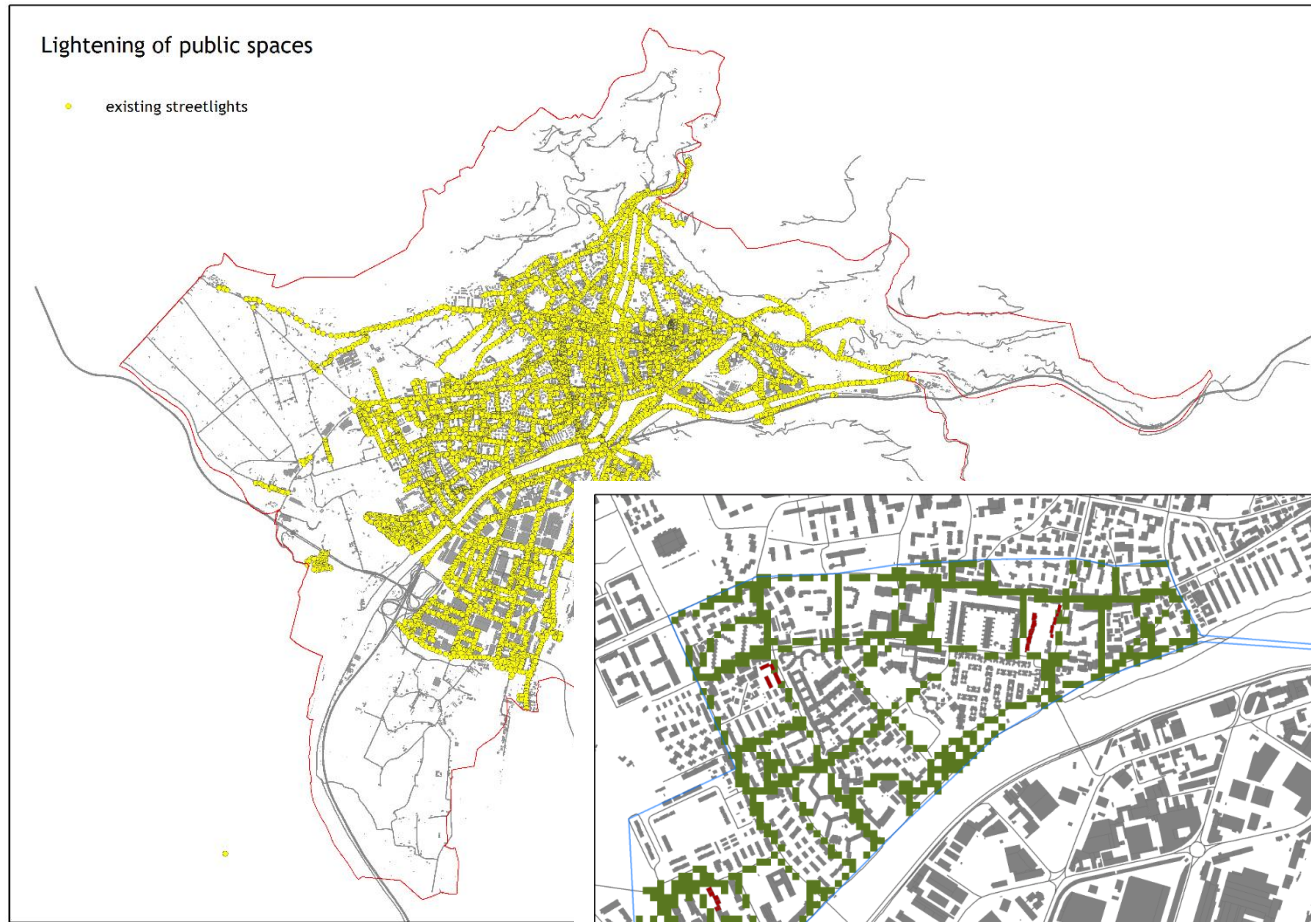
Density weighted analysis of: schools (with internal weights), bars/restaurants, stores (≥ 50 workers), theaters/museums, parking (no hospital and ≥ 150 places), stations (bus and train), principal squares



Info/Services to citizens

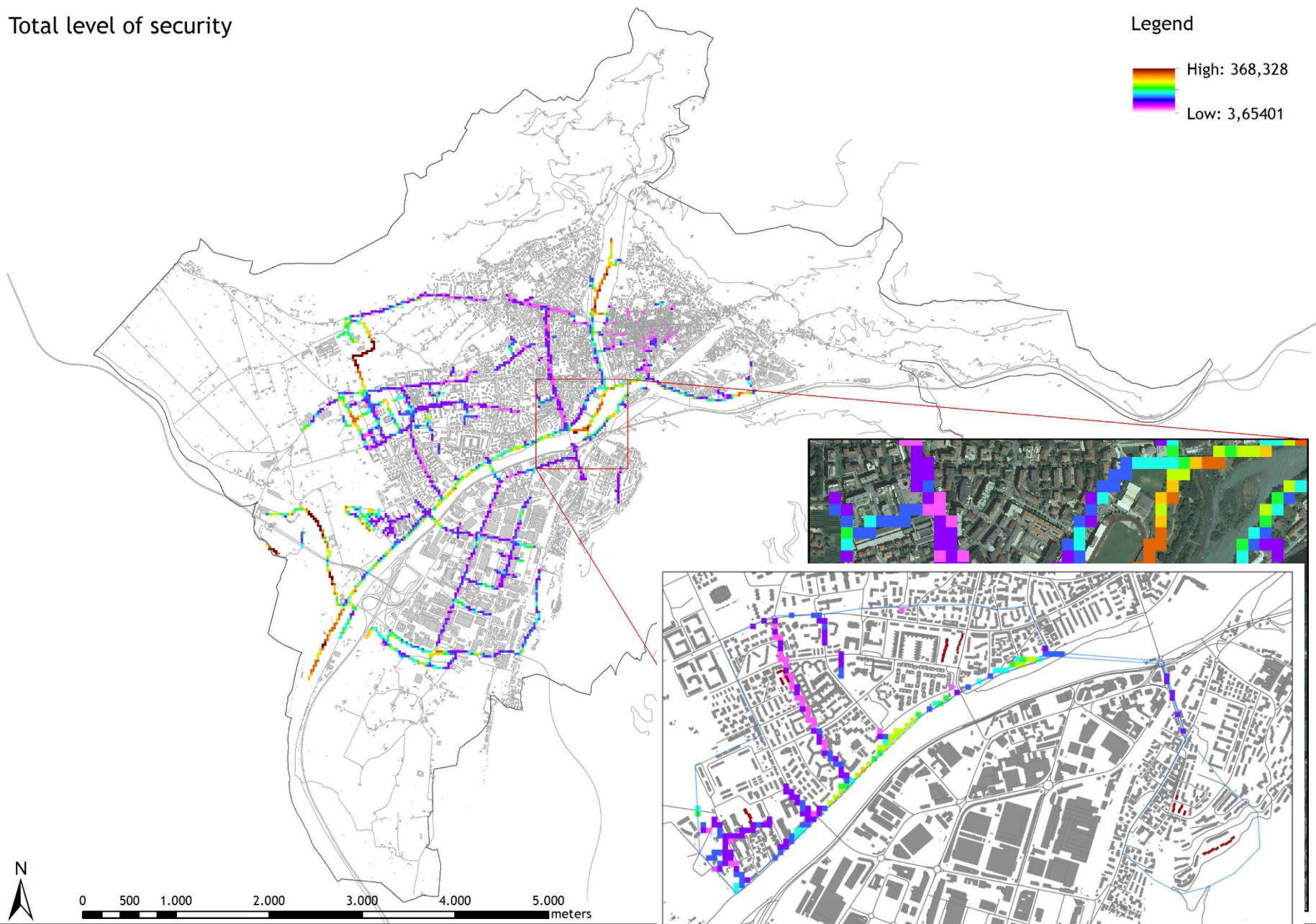
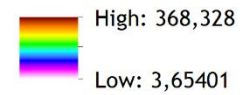
LIGHTENING OF PUBLIC SPACES

Current position of streetlights

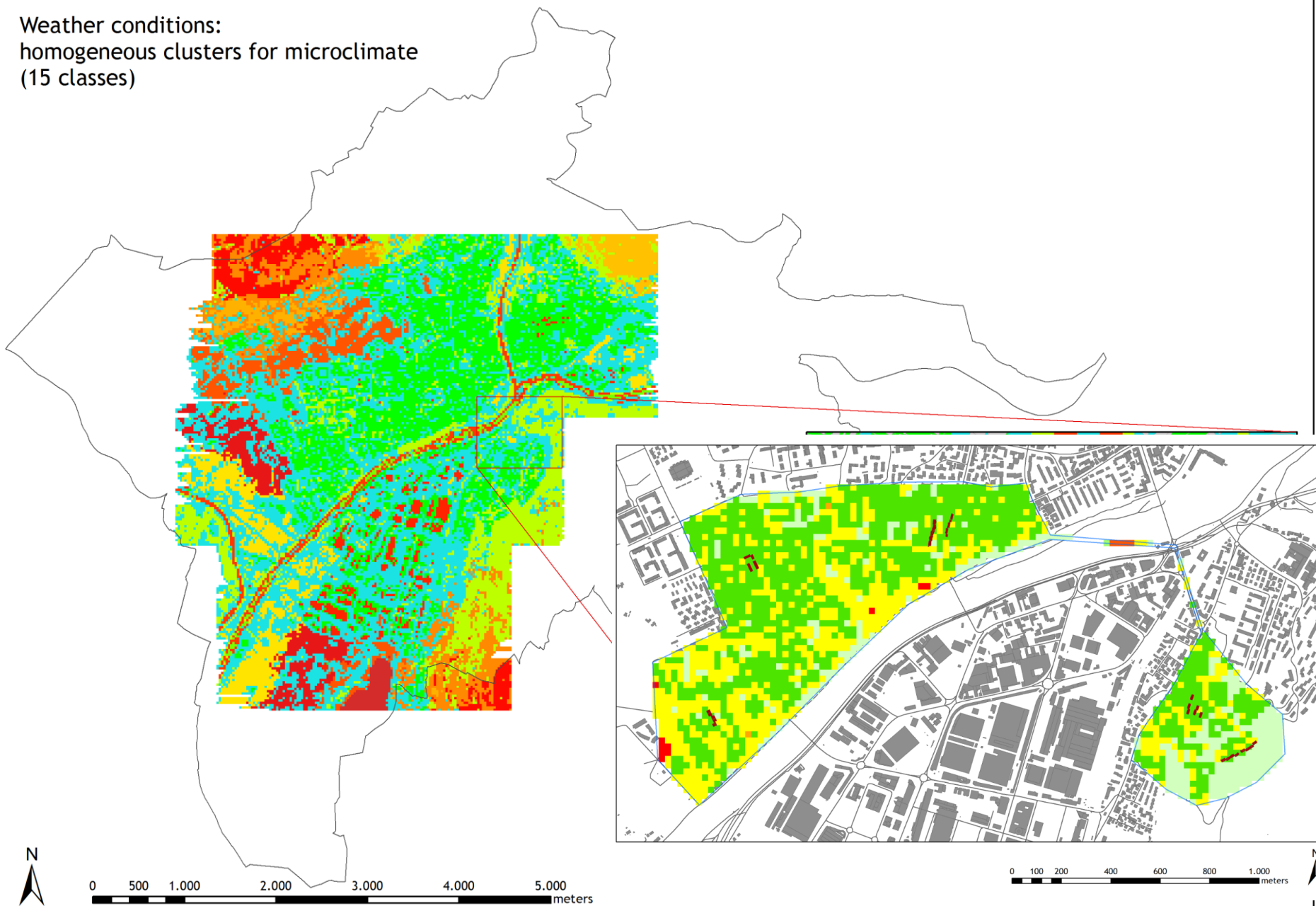


Total level of security

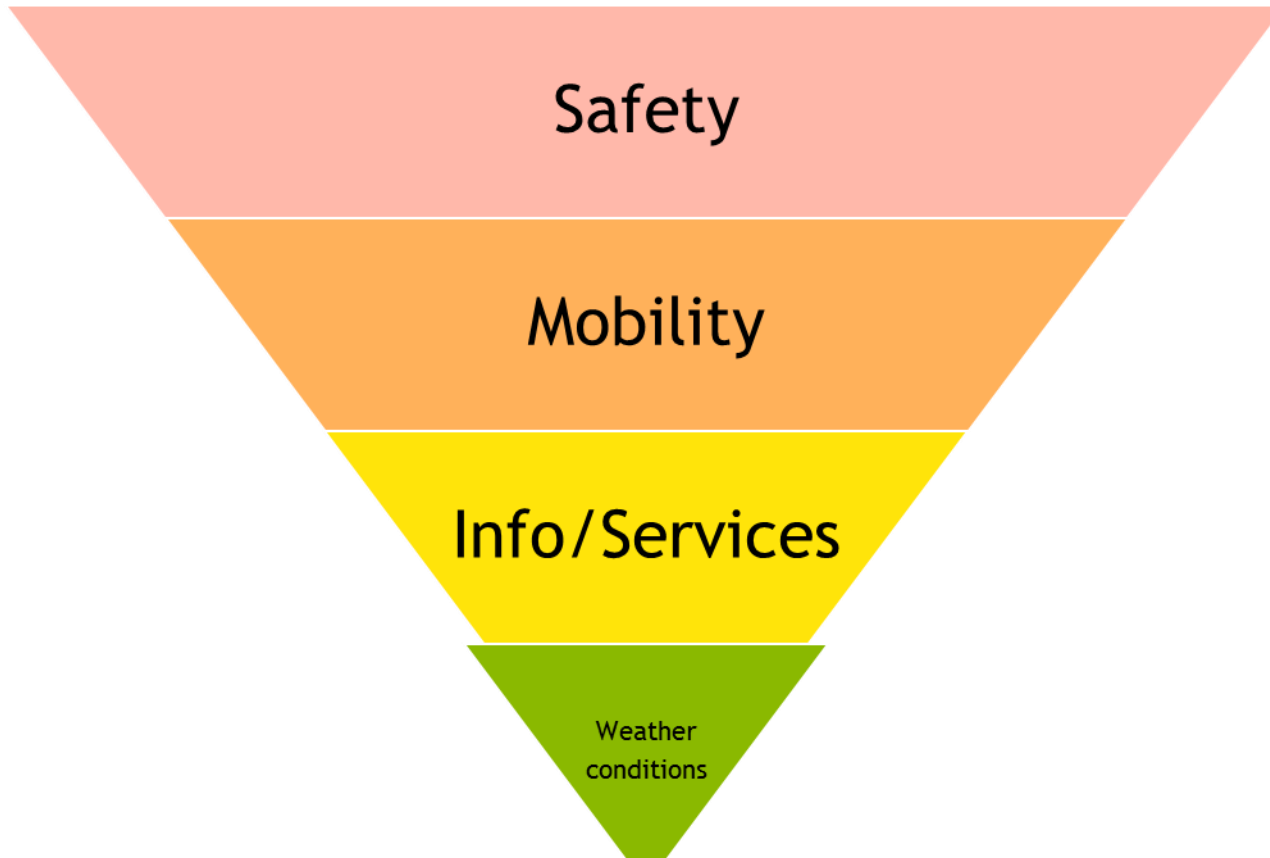
Legend



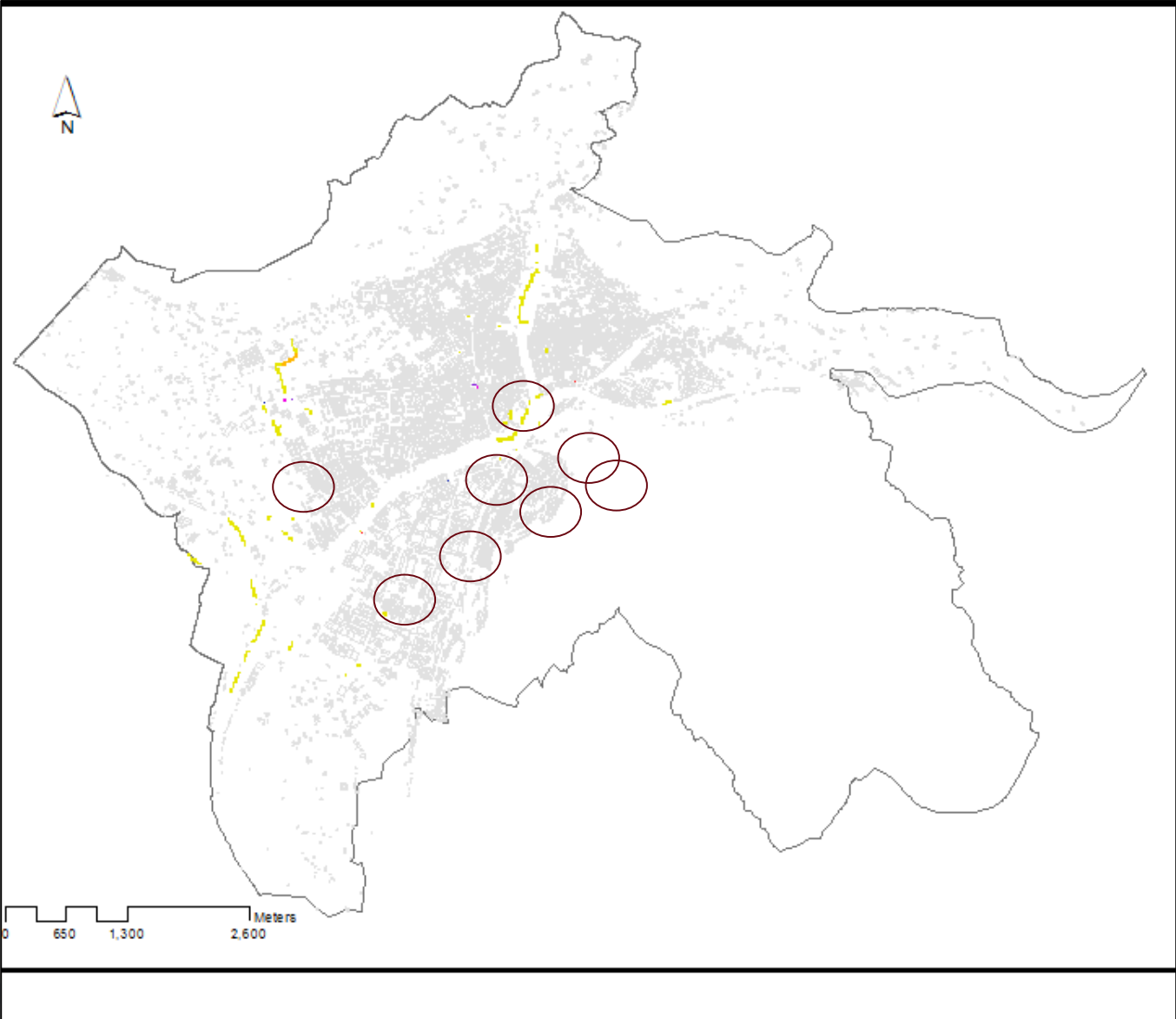
Weather conditions:
homogeneous clusters for microclimate
(15 classes)



Hot Spots identified, weighting



Hot Spots for smart points placement identified



Thank you

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