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S E C A P

Climate Vulnerability Assessment and its role in Transboundary Adaptation Strategies

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IUAV Activities

WP 3.2 - Workflow

- **ATT10 – Vulnerabilty Assessment to Climate Change**

  General objectives: *Assessment of vulnerability to climate change (analysis of urban and sectoral plans - vulnerability assessment).*

  - ATT 10 – Annex I. Atlante transfrontaliero della Vulnerabilità
  - ATT 10 – Annex II. Inventario di strategie, azioni e progetti
  - ATT 10 – Annex III. Online bi-lingual Database

- **ATT11 – Adaptation Strategy**

  General objectives: *Adaptation strategy (Definition of strategies to reduce recognised vulnerabilities - Sharing of project activities and discussion with PP).*

Integrated with Mitigation Strategy

- **ATT12 – Guidelines for Municipalities**

  General objectives: *Guidelines for municipalities (draft guidelines - Sharing of project activities and comparison with PPs - Translations of project reports and documents).*

  WP 3.2 - Expected results: *Inventory of strategies, measures and projects already defined and useful to increase urban resilience, a bilingual online database of statistics/useful data on energy/climate/environment, an Italian-Slovenian atlas of the vulnerability of territories with insights on the urban scale, Guidelines for Municipalities.*

Integrated with PilotActions

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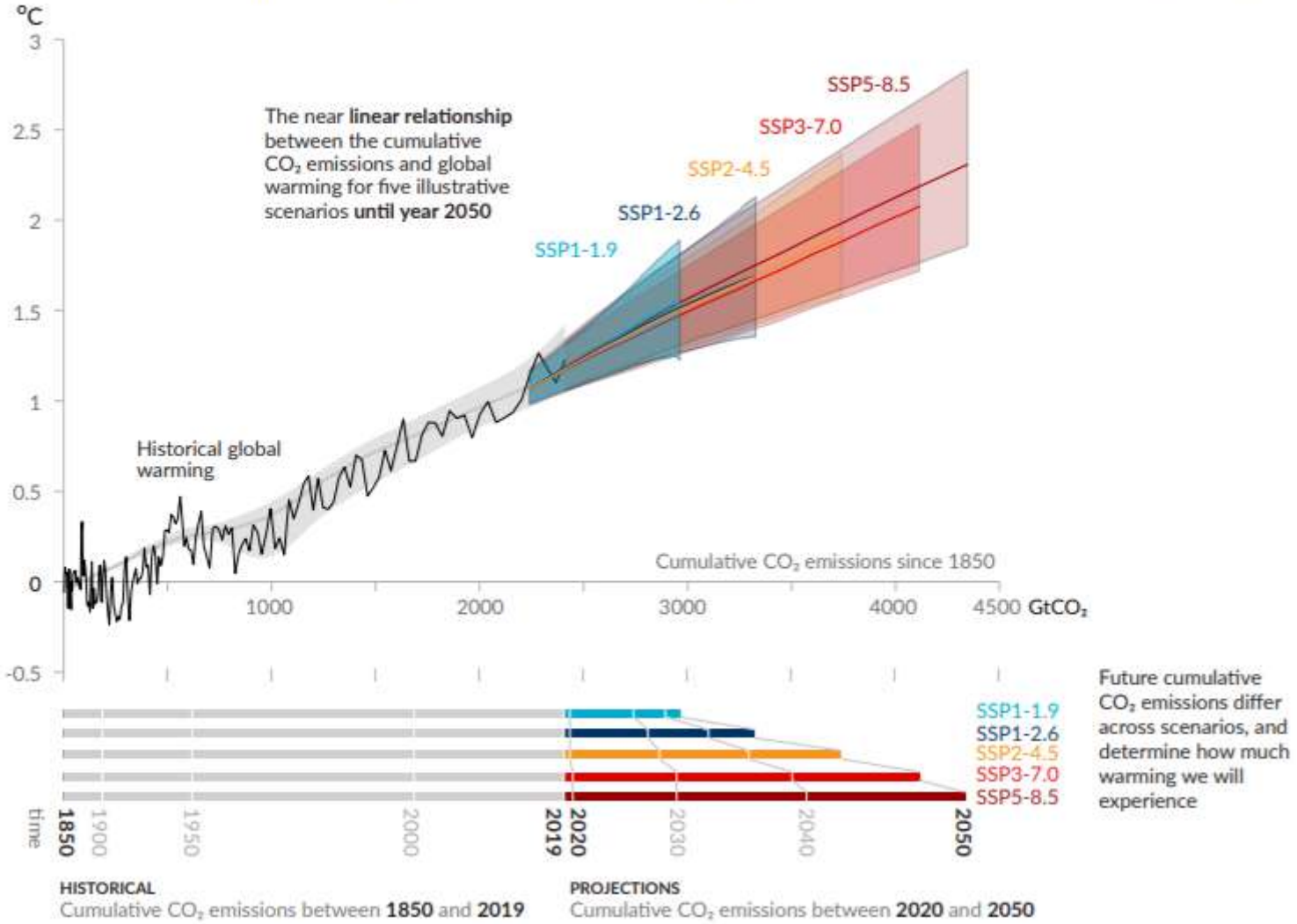
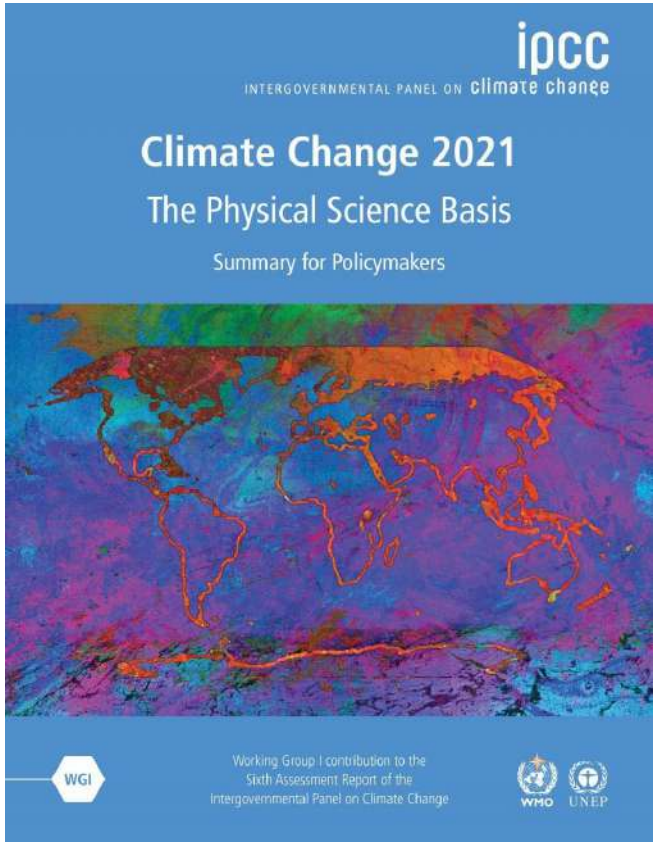
From Vulnerability Assessment to Adaptation Strategies

Climate Change Effects on Territories

Every tonne of CO_2 emissions adds to global warming

Global surface temperature increase since 1850-1900 (°C) as a function of cumulative CO_2 emissions ($GtCO_2$)





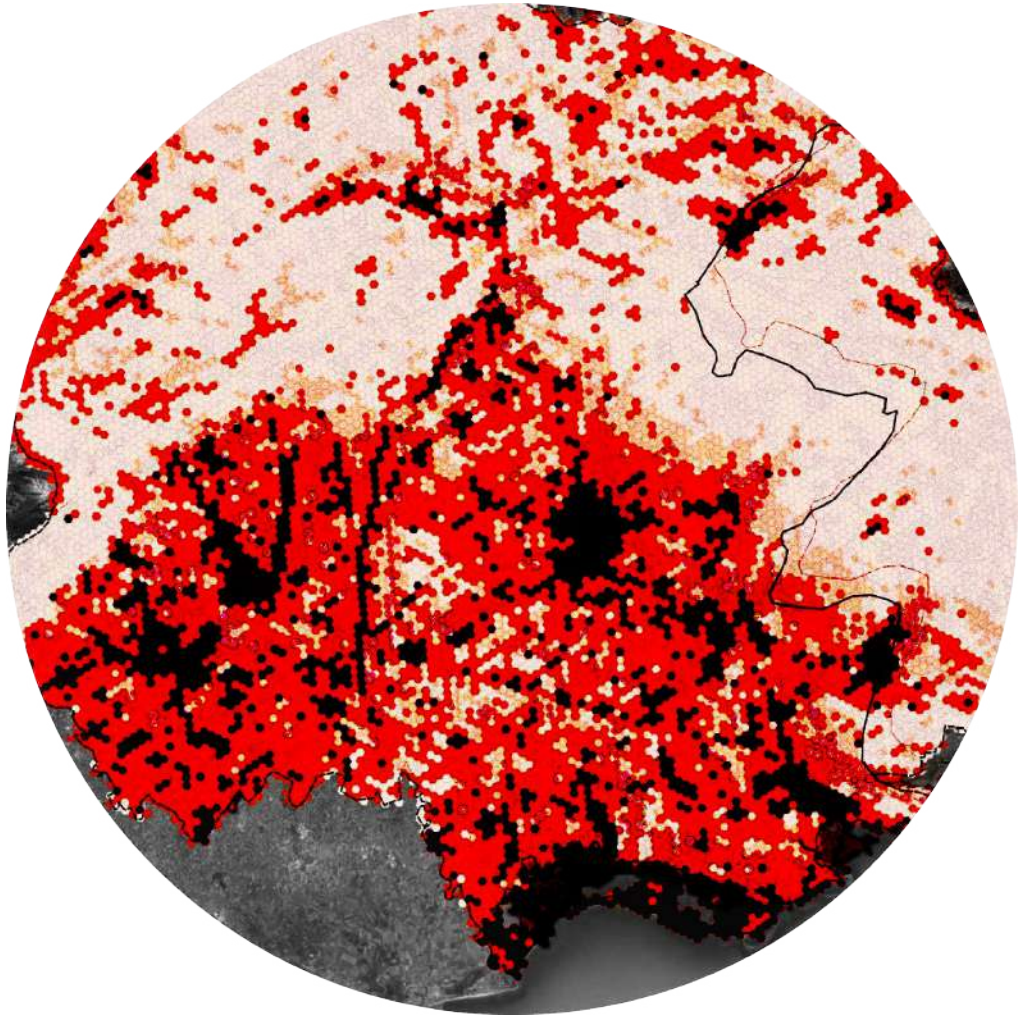
EU initiatives: The New Covenant of Mayors

The New Covenant of Mayors guidelines recognize the following effects of climate change:

- Extreme heat
- extreme cold
- Extreme rainfall
- Flooding
- Sea level rise
- Drought
- Storms
- Landslides
- Forest fires

Covenant of Mayors
for Climate & Energy
EUROPE

Vulnerability assessment as a key tool



Vulnerability maps aim to

Define cross-border strategies

support local authorities in the implementation of SECAPS

Supporting coordination in local action

Preliminary considerations on the results of the Assessments

Three different survey **methodologies** were produced with the aim of **developing** a precise tool to recognise and quantify the **different vulnerabilities.**

Urban Flooding

- Venezia
- Friuli - Venezia Giulia
- Slovenia

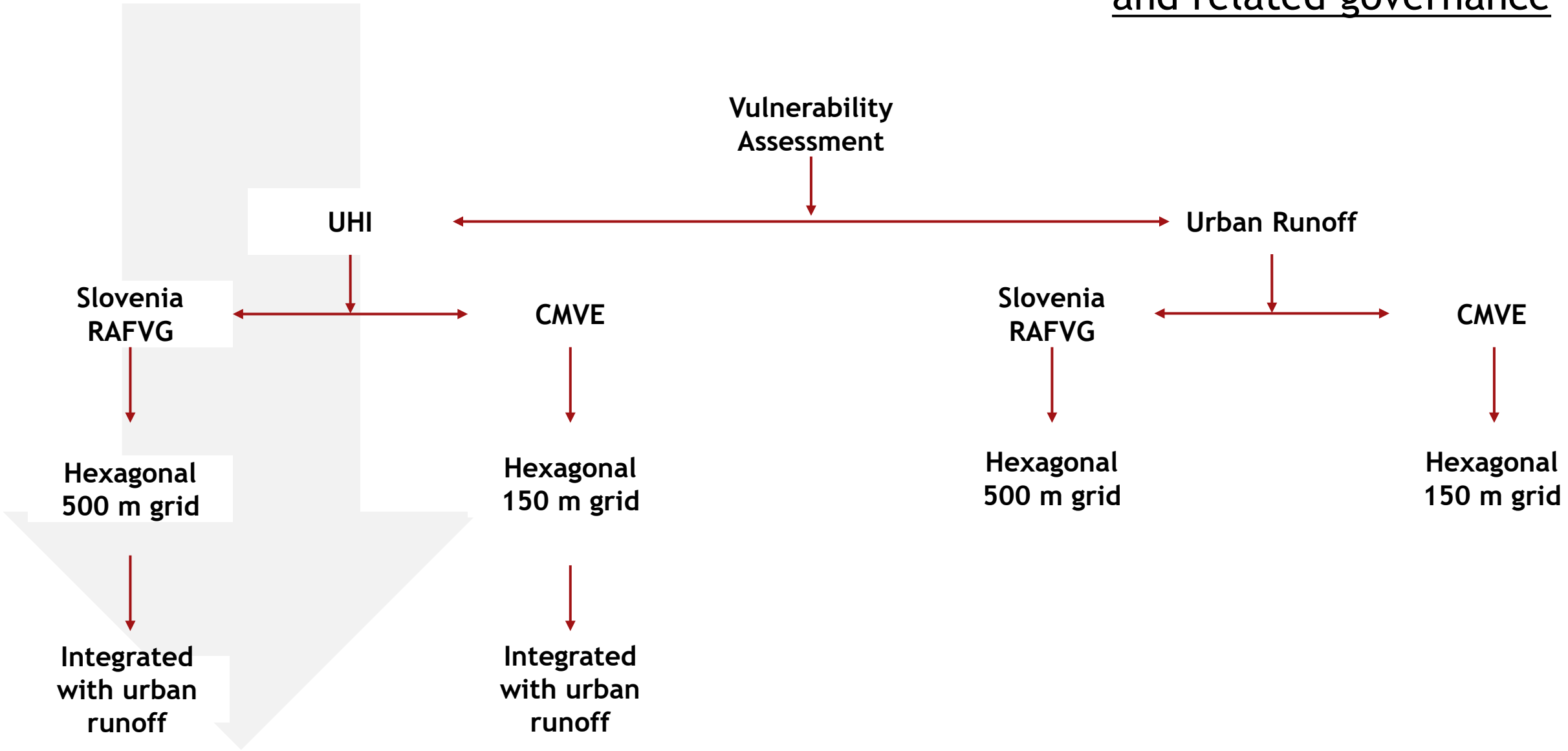
Urban Heat Island

- Città Metropolitana di Venezia
- Friuli - Venezia Giulia
- Slovenia

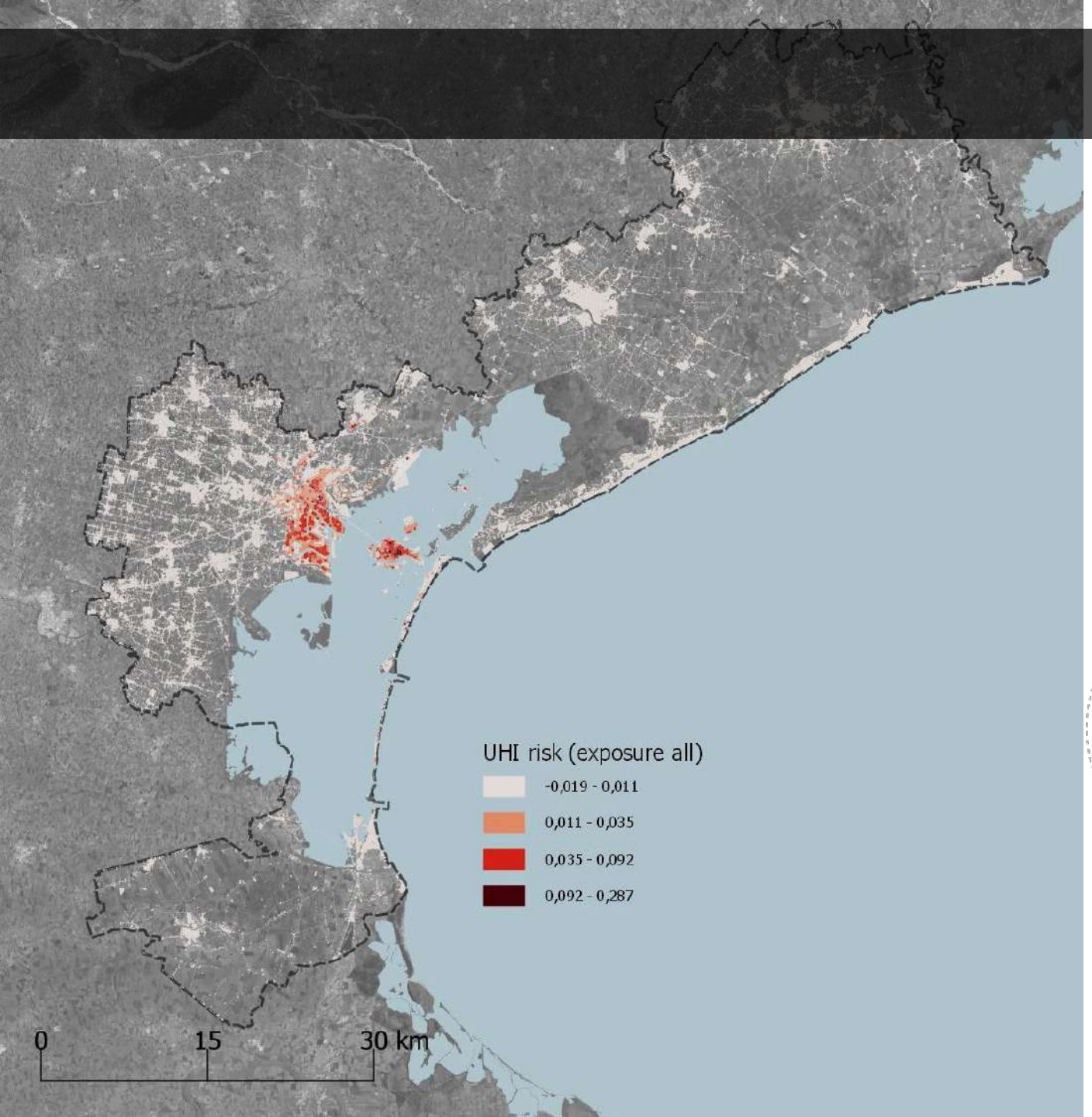
Snow and Ice Melting

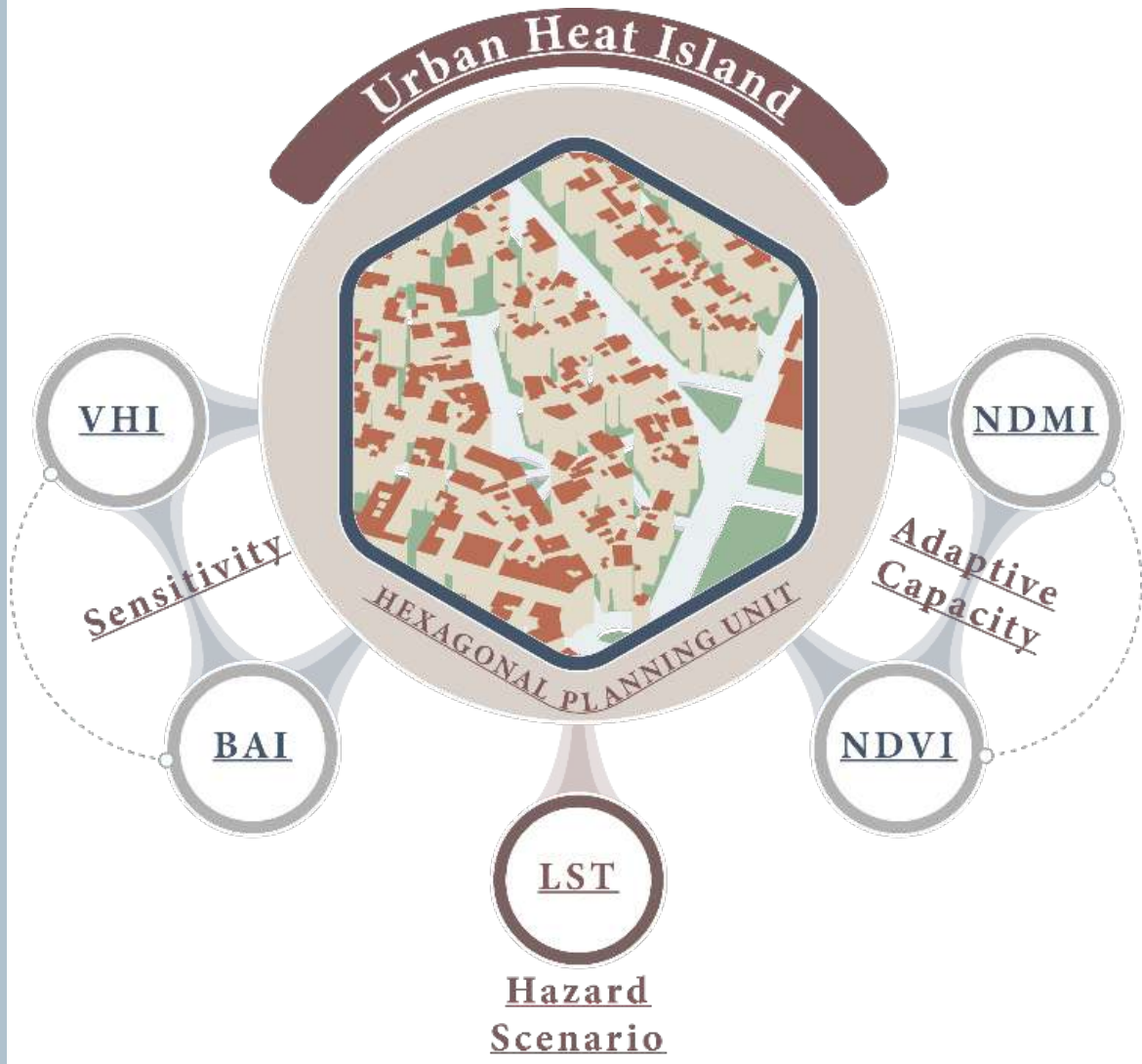
- Slovenia
- Friuli - Venezia Giulia

Outputs must interact with the scale of spatial morphology and related governance

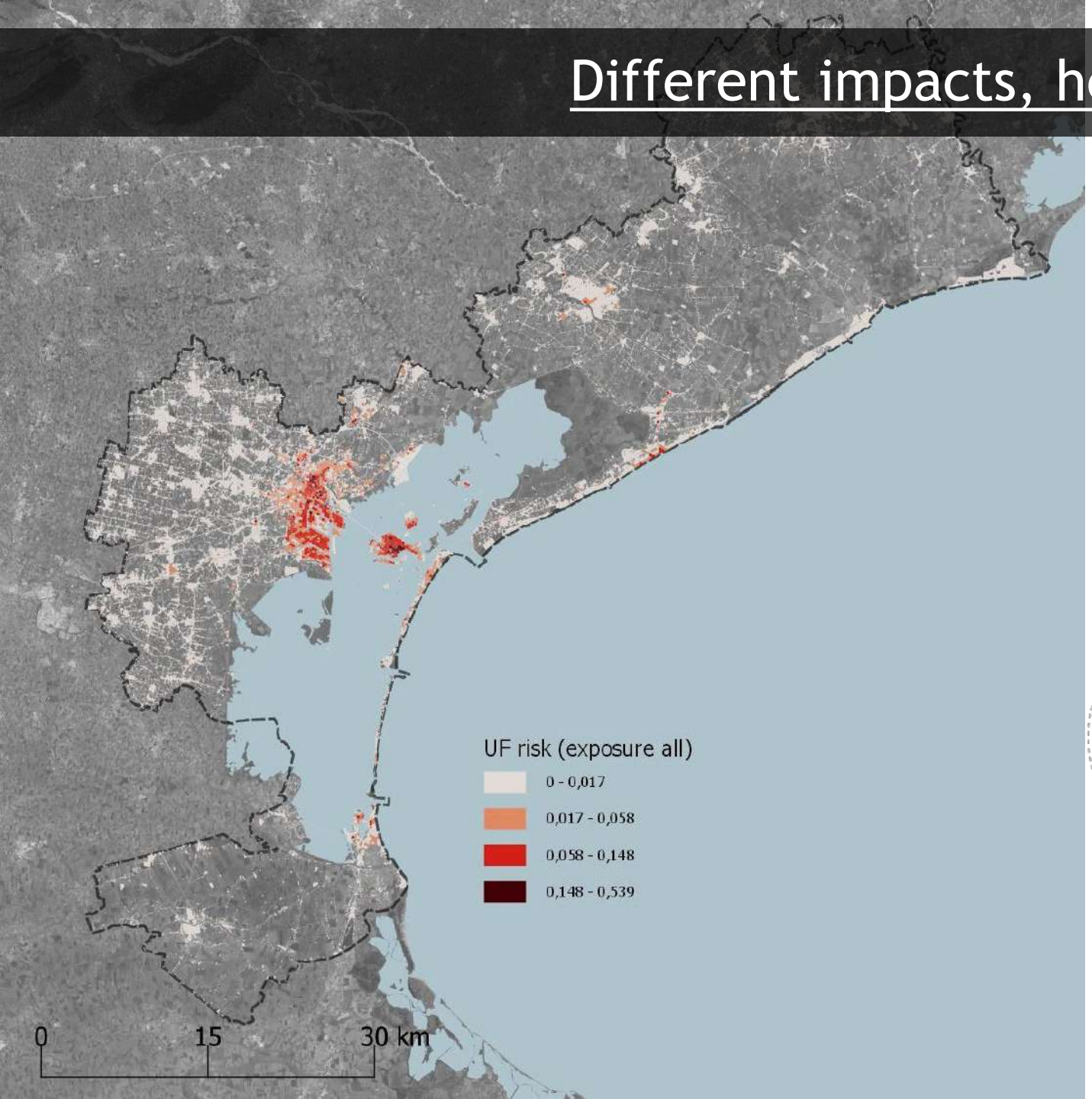


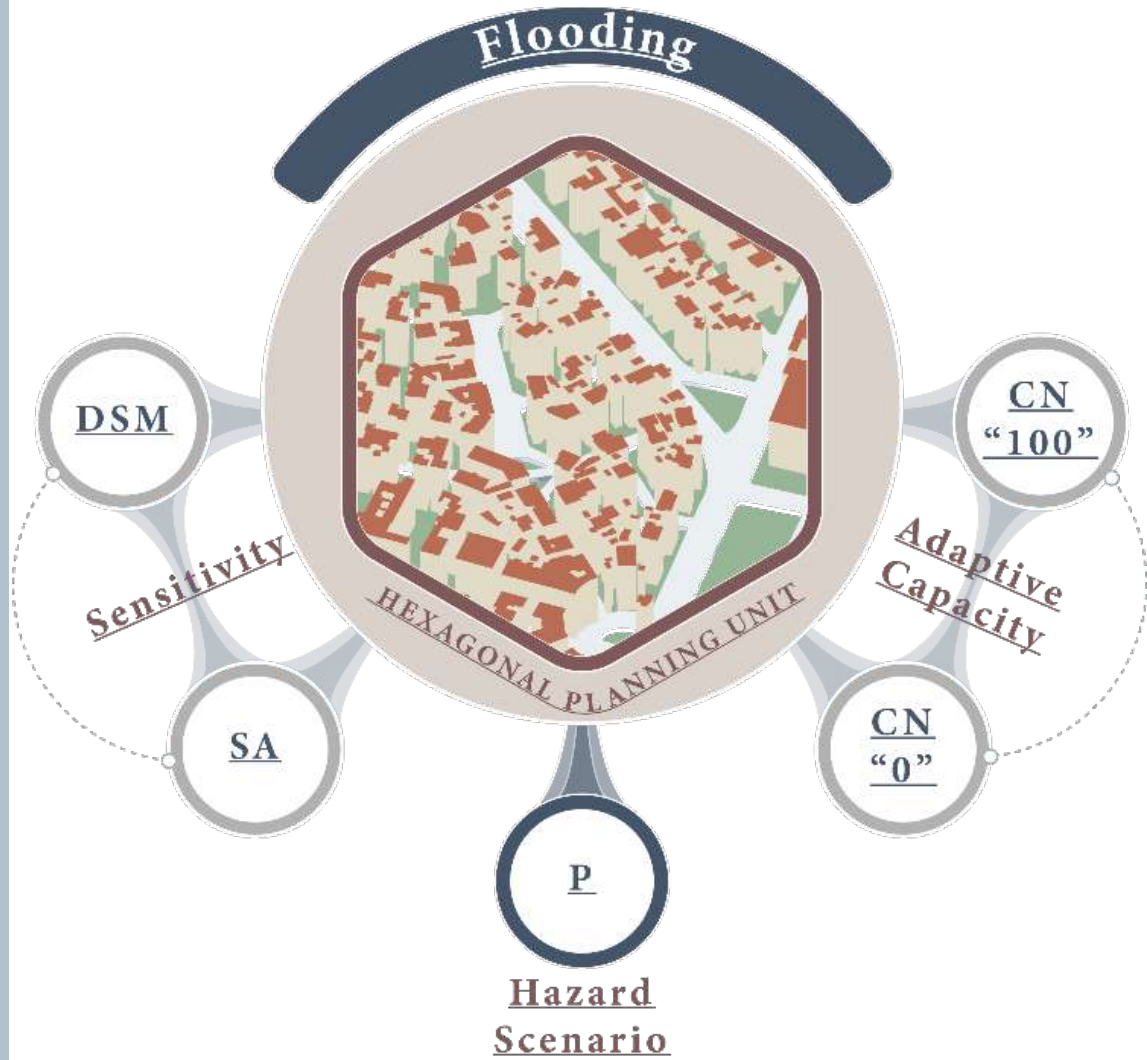
Towards a versatile approach



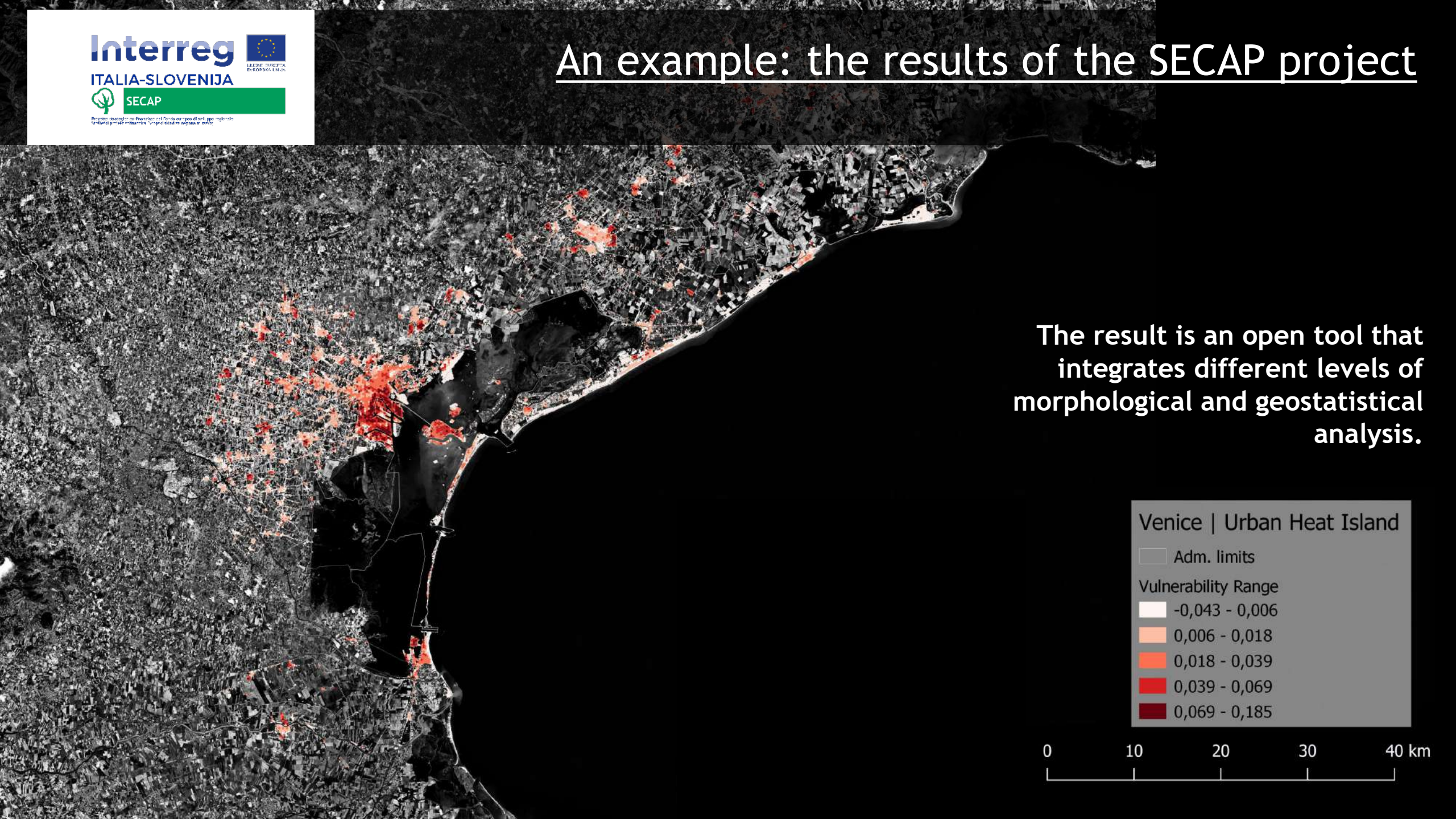


Different impacts, heterogeneous information bases



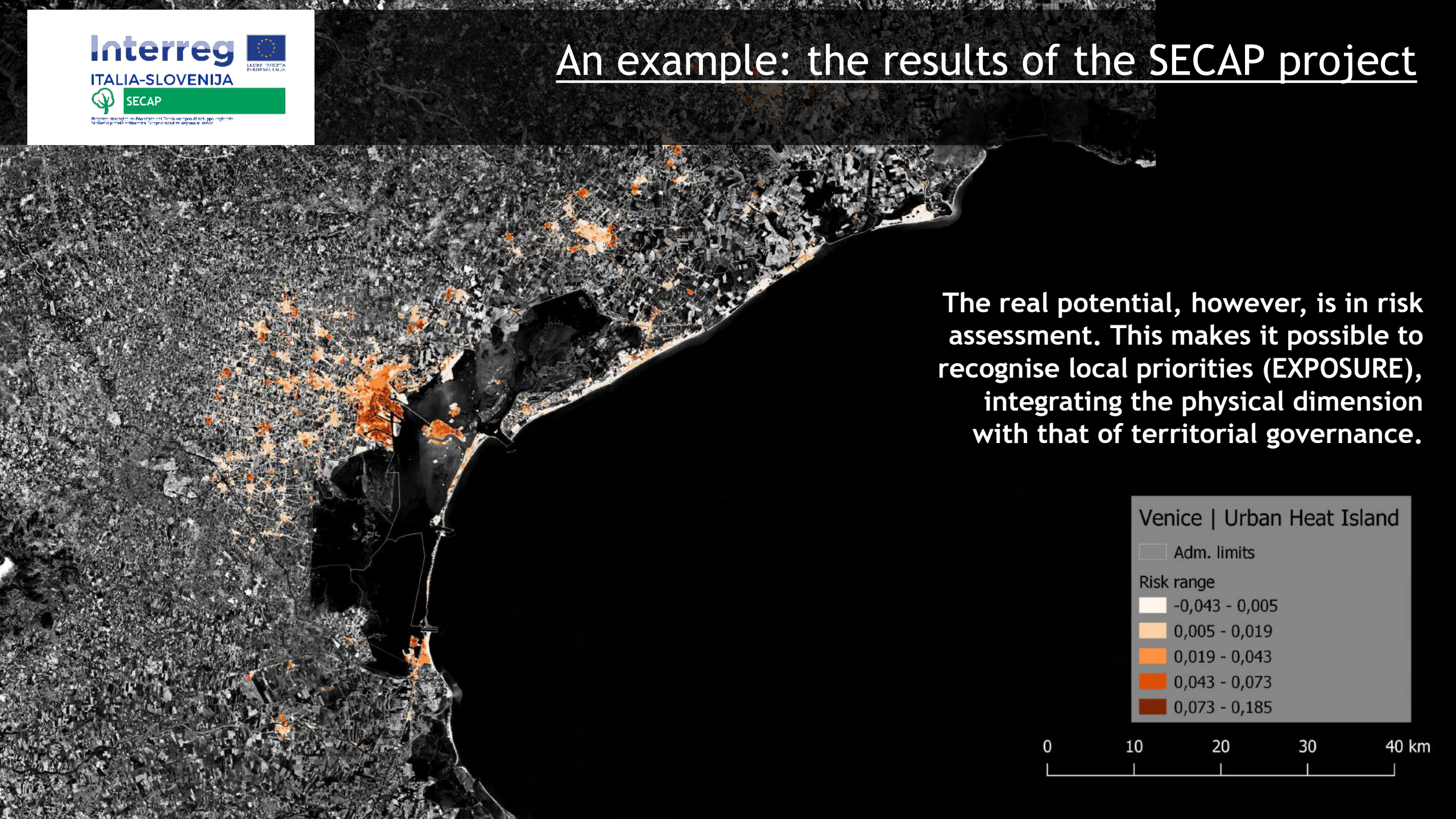


An example: the results of the SECAP project



The result is an open tool that integrates different levels of morphological and geostatistical analysis.

An example: the results of the SECAP project



The real potential, however, is in risk assessment. This makes it possible to recognise local priorities (EXPOSURE), integrating the physical dimension with that of territorial governance.

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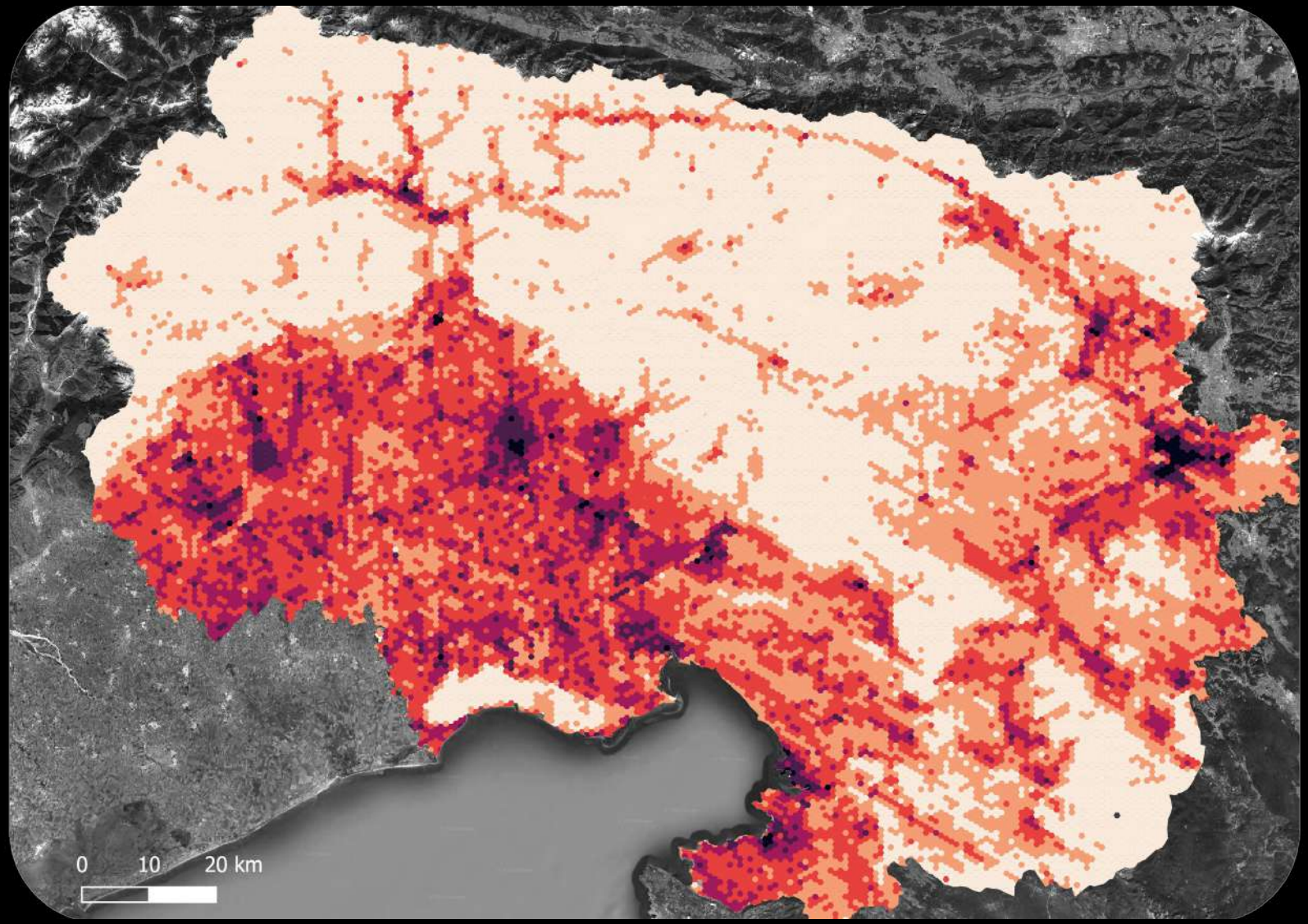

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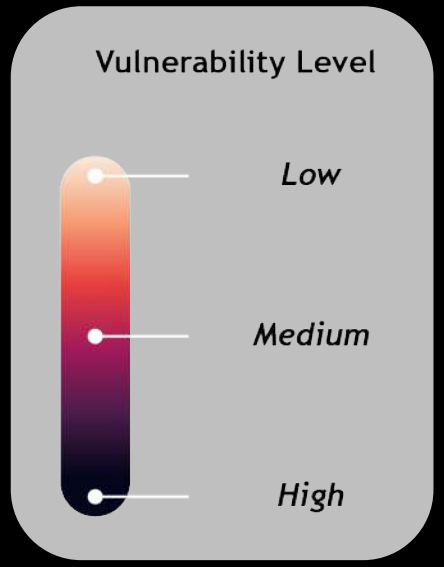
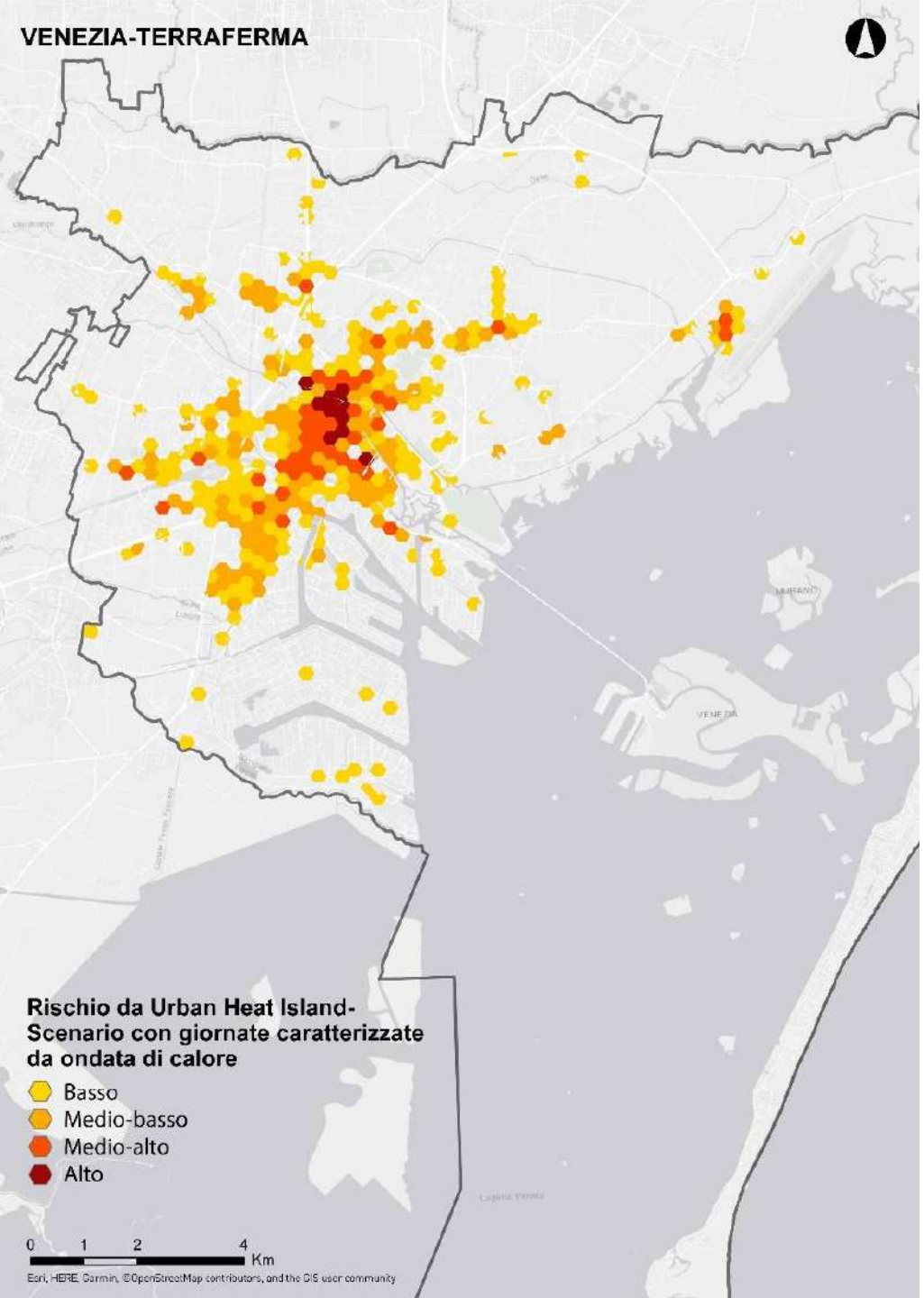


Exposure as a key to local action



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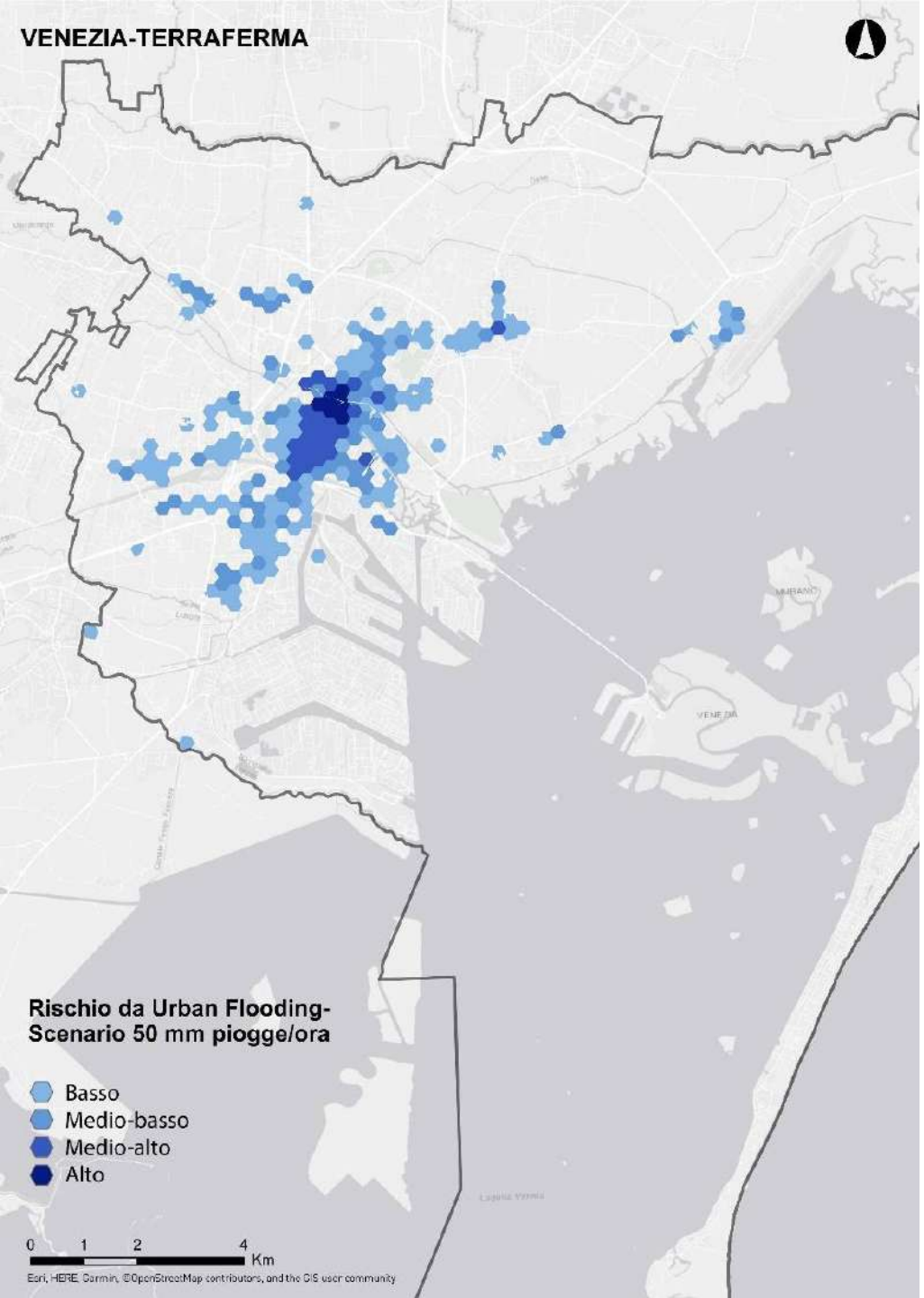
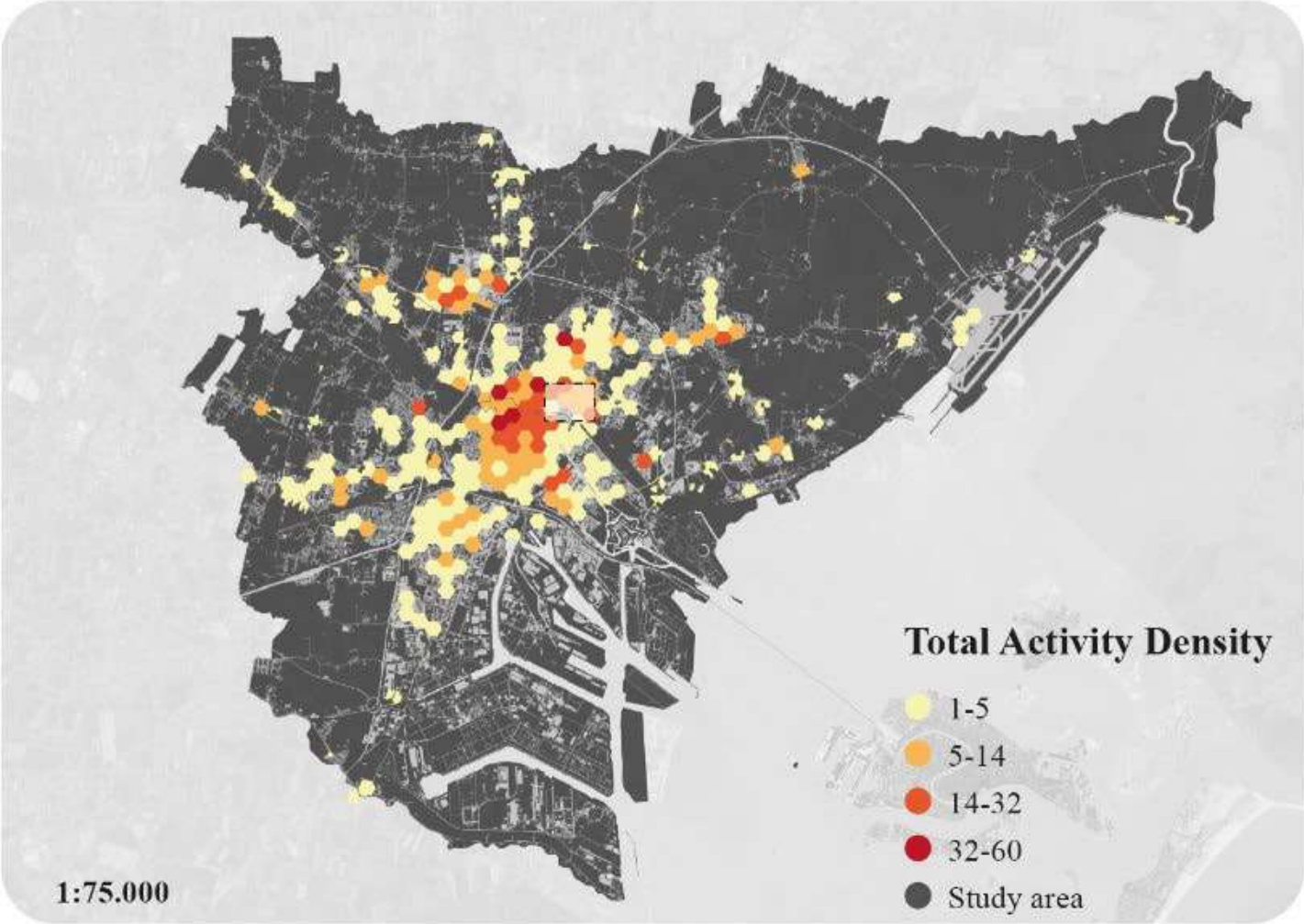
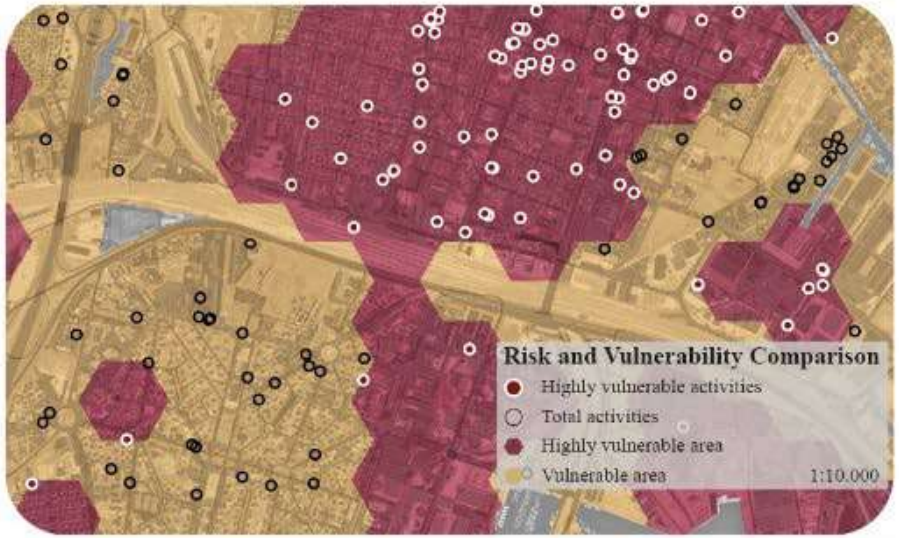


Risk as support for subsidiarity

Flooding Exposure Assessment Results



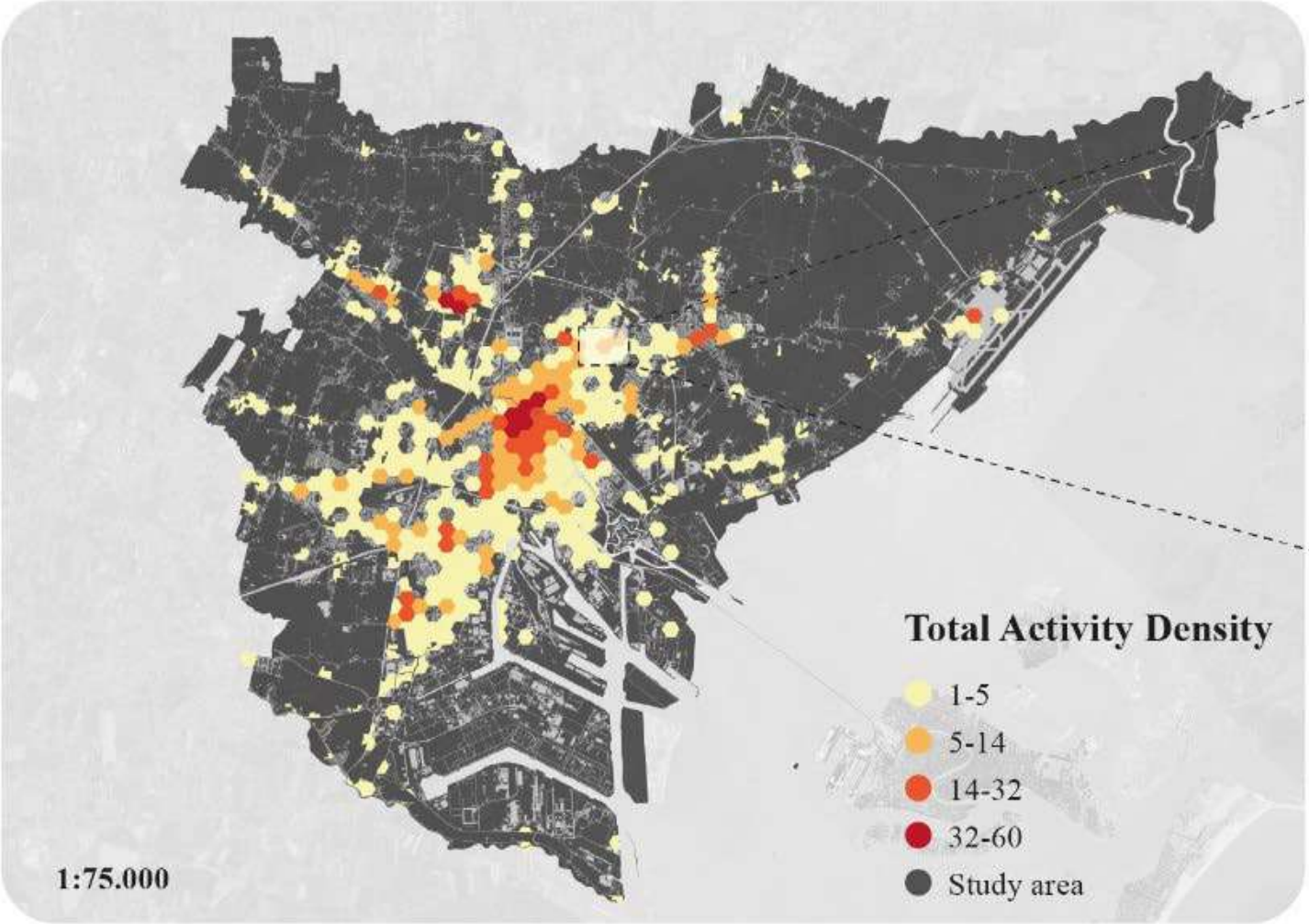
HEALTH &SOCIAL ASSISTANCE



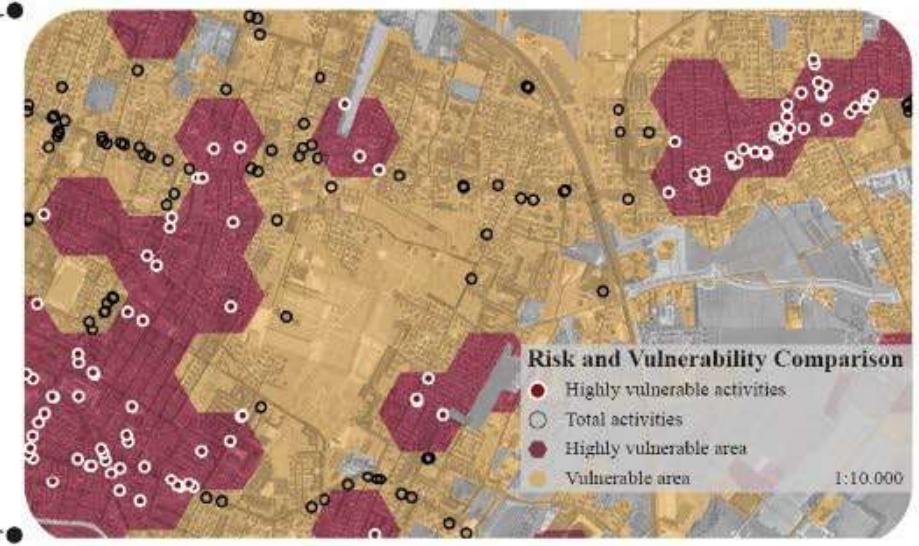
Total Activities	Vulnerable Activities	Vulnerability range
1,050	507 (48.29%)	106.98-132.21

Risk as support for subsidiarity

Flooding Exposure Assessment Results



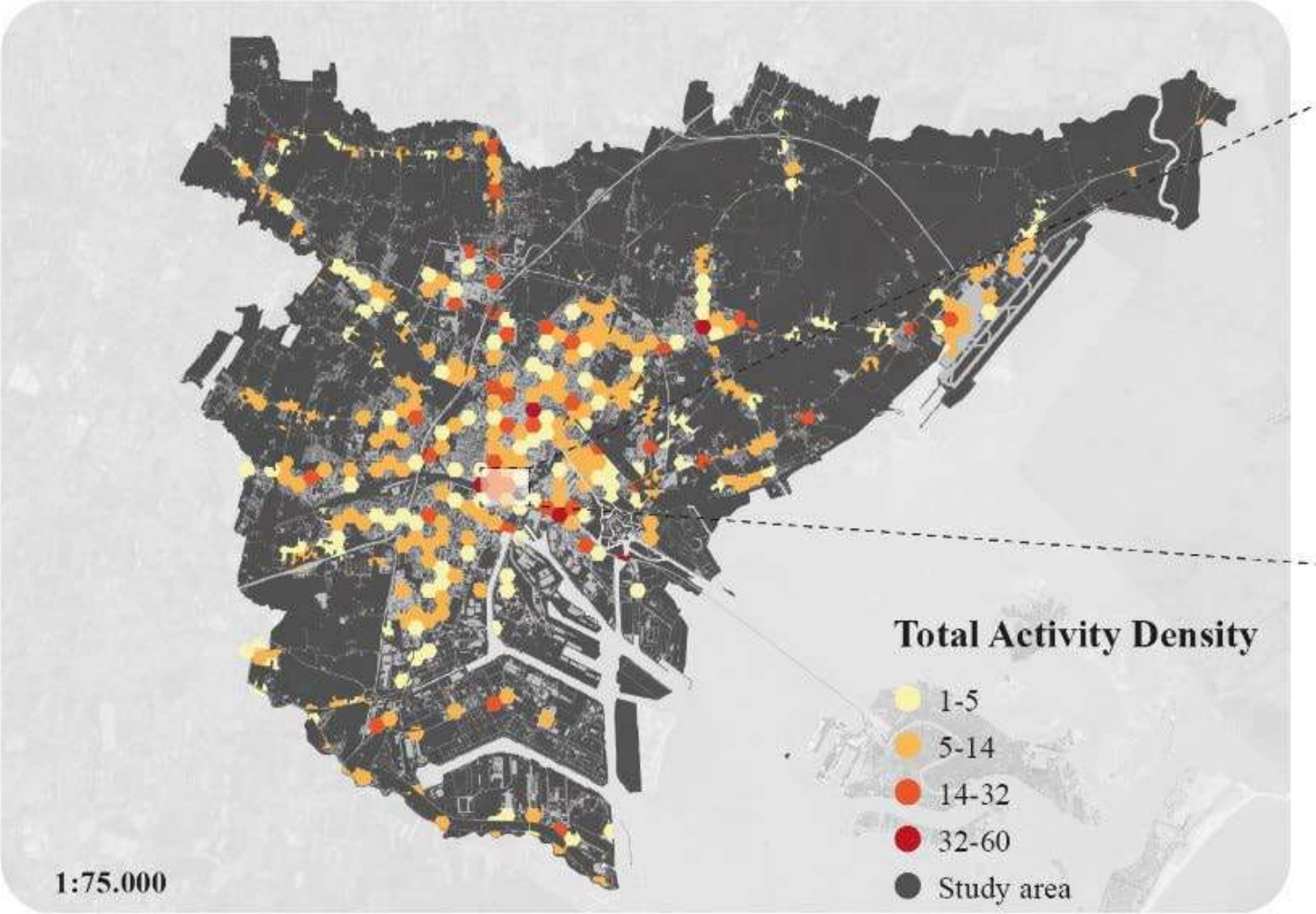
COMMERCE



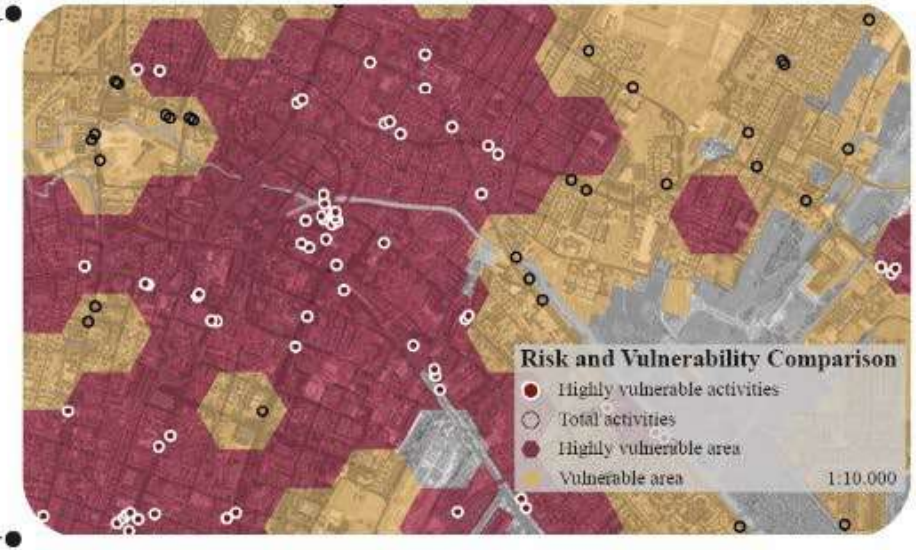
Total Activities	Vulnerable Activities	Vulnerability range
2,011	1,067 (53.06%)	106.98-132.21

Risk as support for subsidiarity

Urban Heat Island Exposure Assessment Results



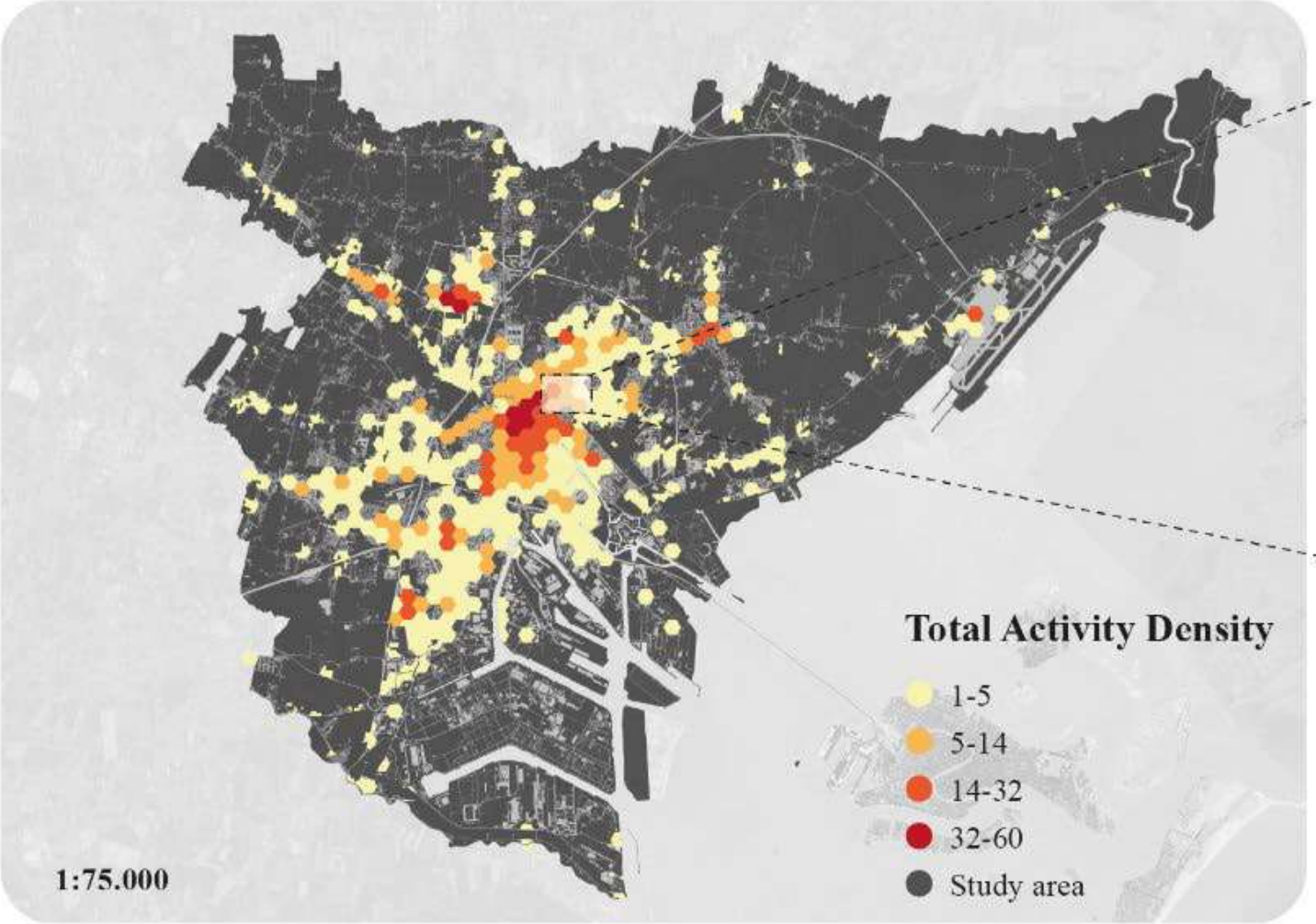
PUBLIC TRANSPORT



Total Activities	Vulnerable Activities	Vulnerability range
747	228 (30.52%)	0.465-0.690

Risk as support for subsidiarity

Urban Heat Island Exposure Assessment Results



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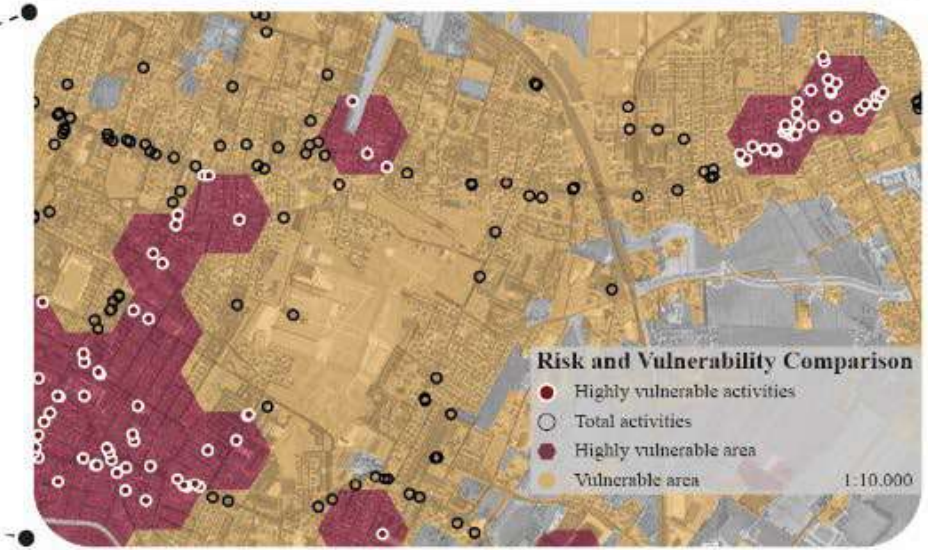
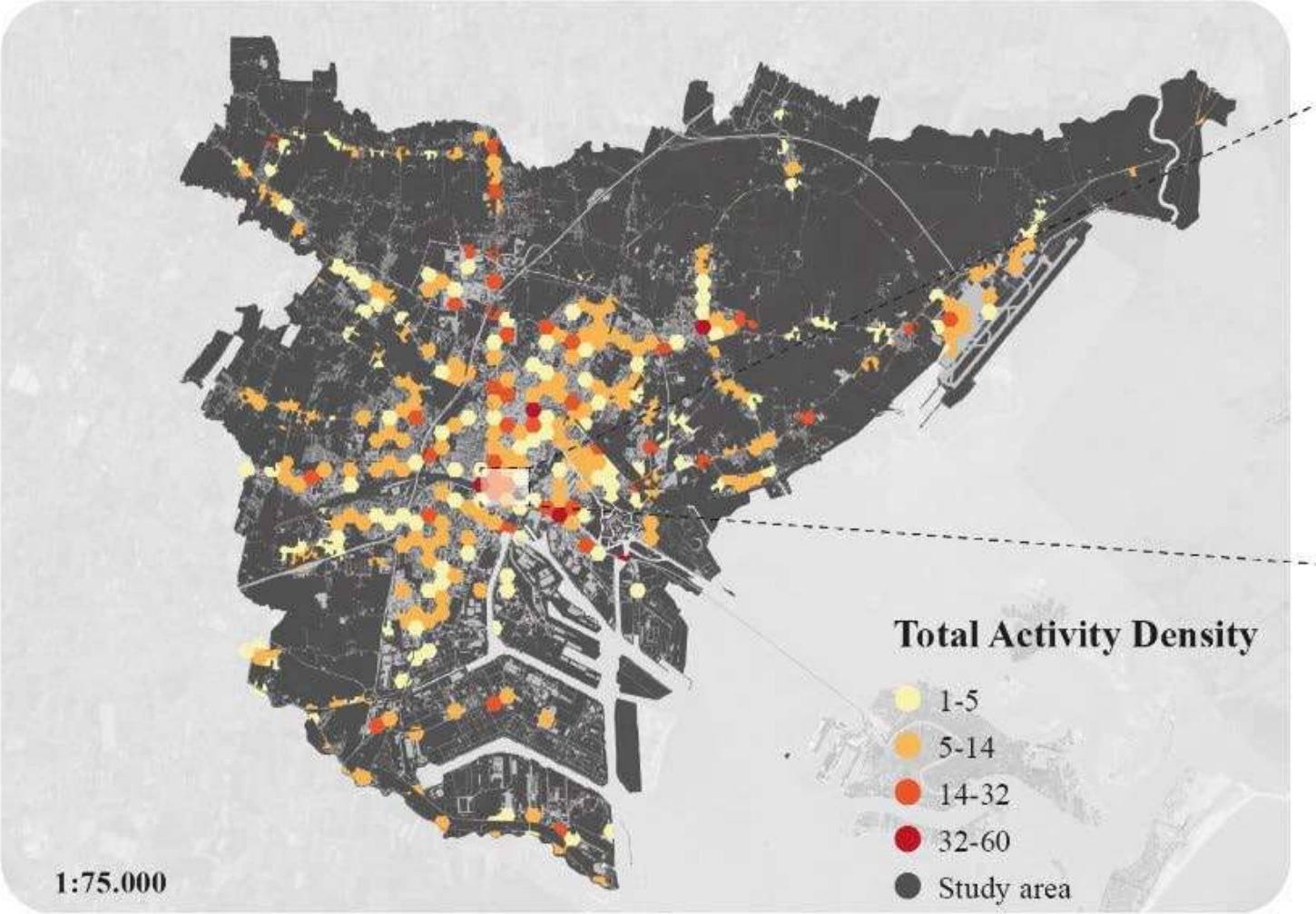


Total Activities	Vulnerable Activities	Vulnerability range
2,011	1,147 (57.04%)	0.465 - 0.7540

Risk as support for subsidiarity

Urban Heat Island Exposure Assessment Results



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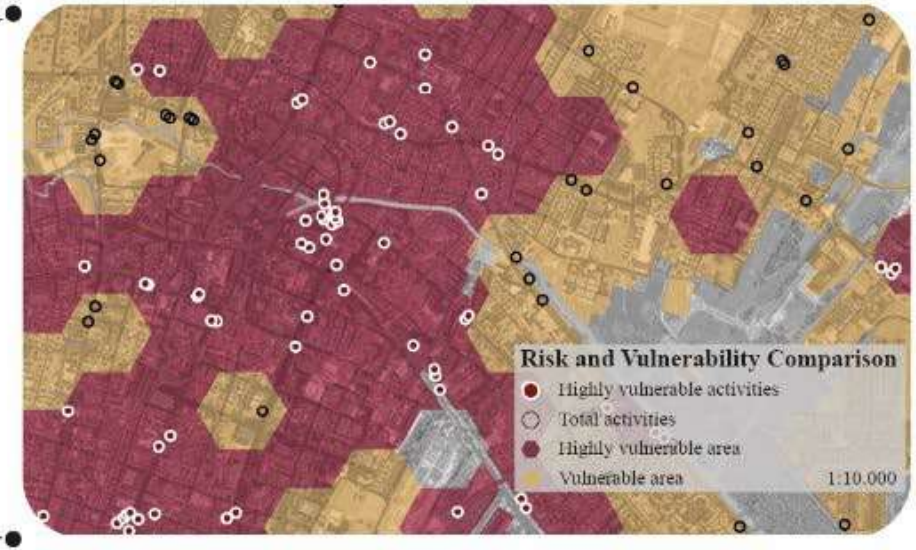

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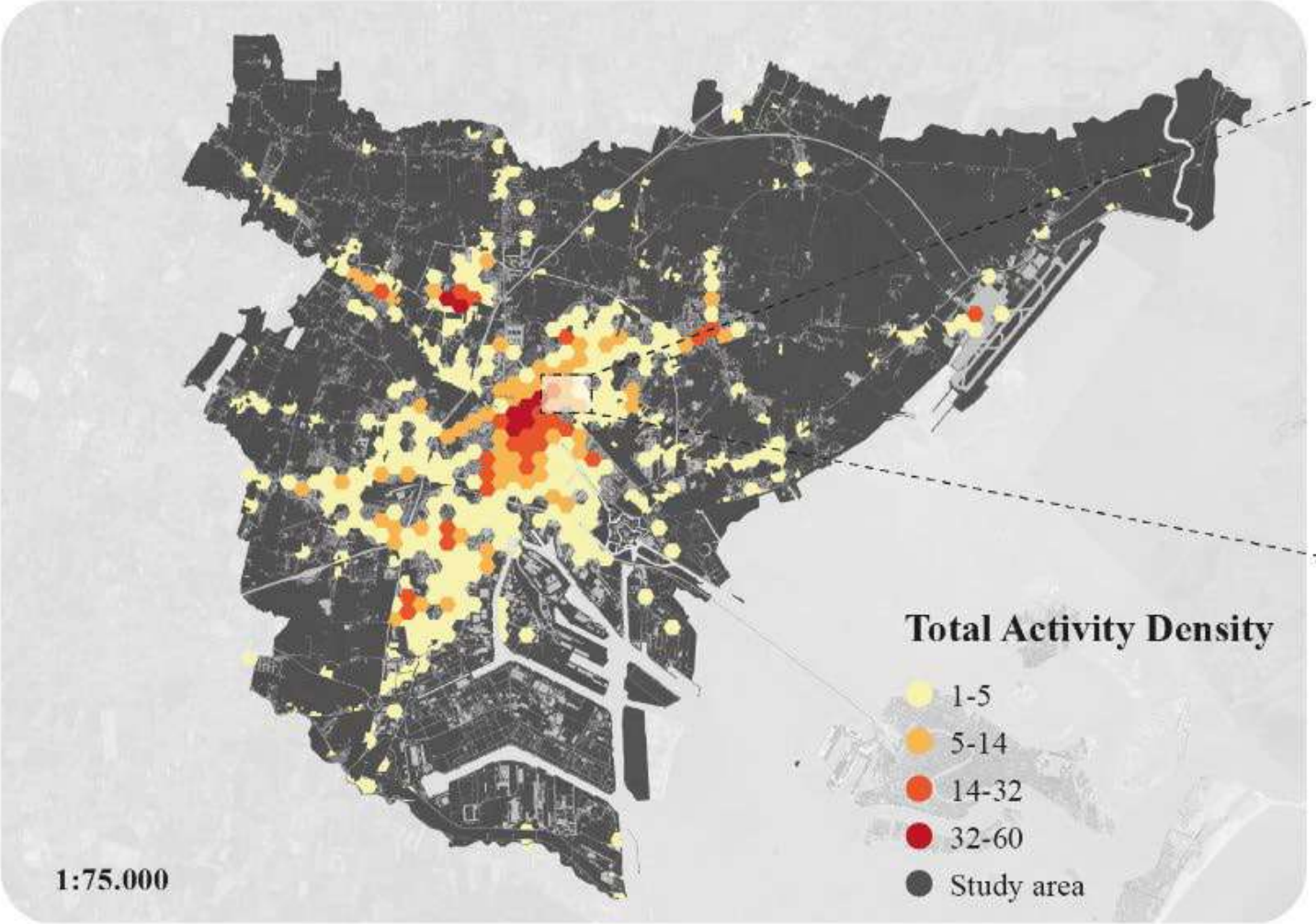

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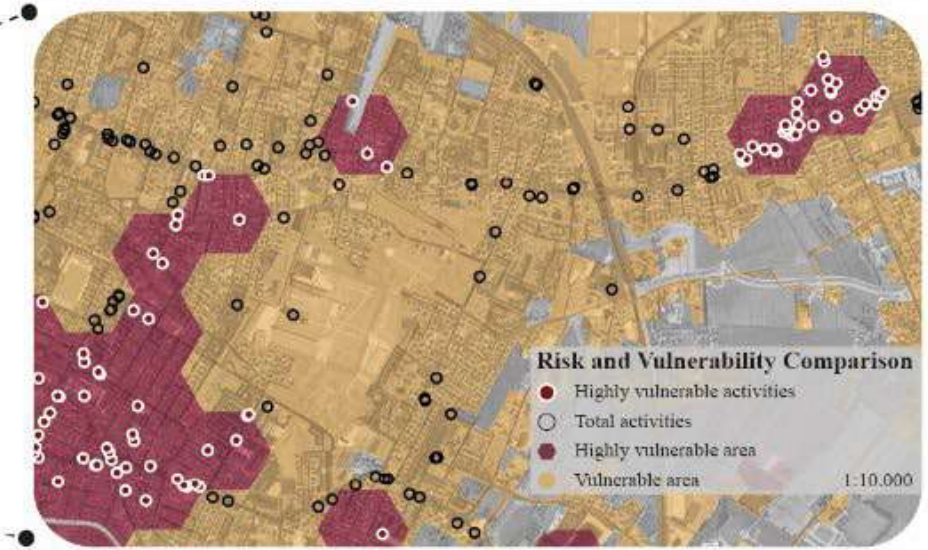

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Integration with cross-border knowledge tools

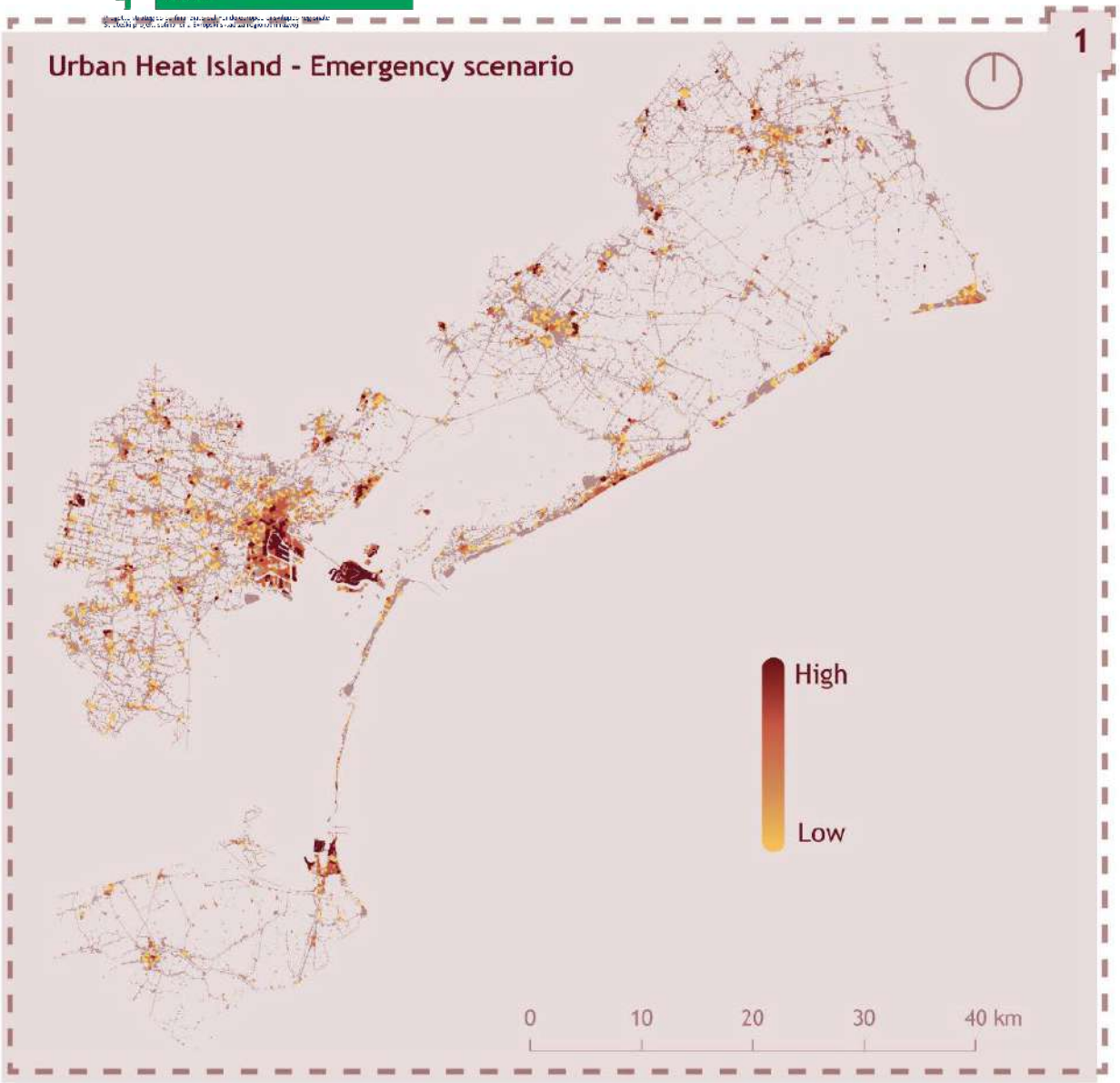
For the definition of land uses, the third classification level of the Corine Land Cover updated in 2018 was used. It should be noted that, as these are urban impacts, only classes closely related to this context have been selected:

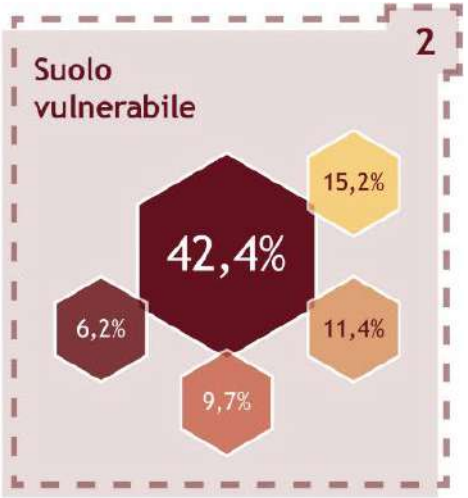
- Construction Sites (CS);
- Continuous Urban Fabric (CUF);
- Discontinuous Urban Fabric (DUF);
- Industrial and Commercial Units (ICU);
- Major Infrastructure Nodes (MIN);
- Road and Rail Networks and associated land (RRN);
- Sports and Leadure Facilities (SLF).

4 levels of heat (uhi) and water (uf) susceptibility:

- Low
- Medium-Low
- Medium-High
- High

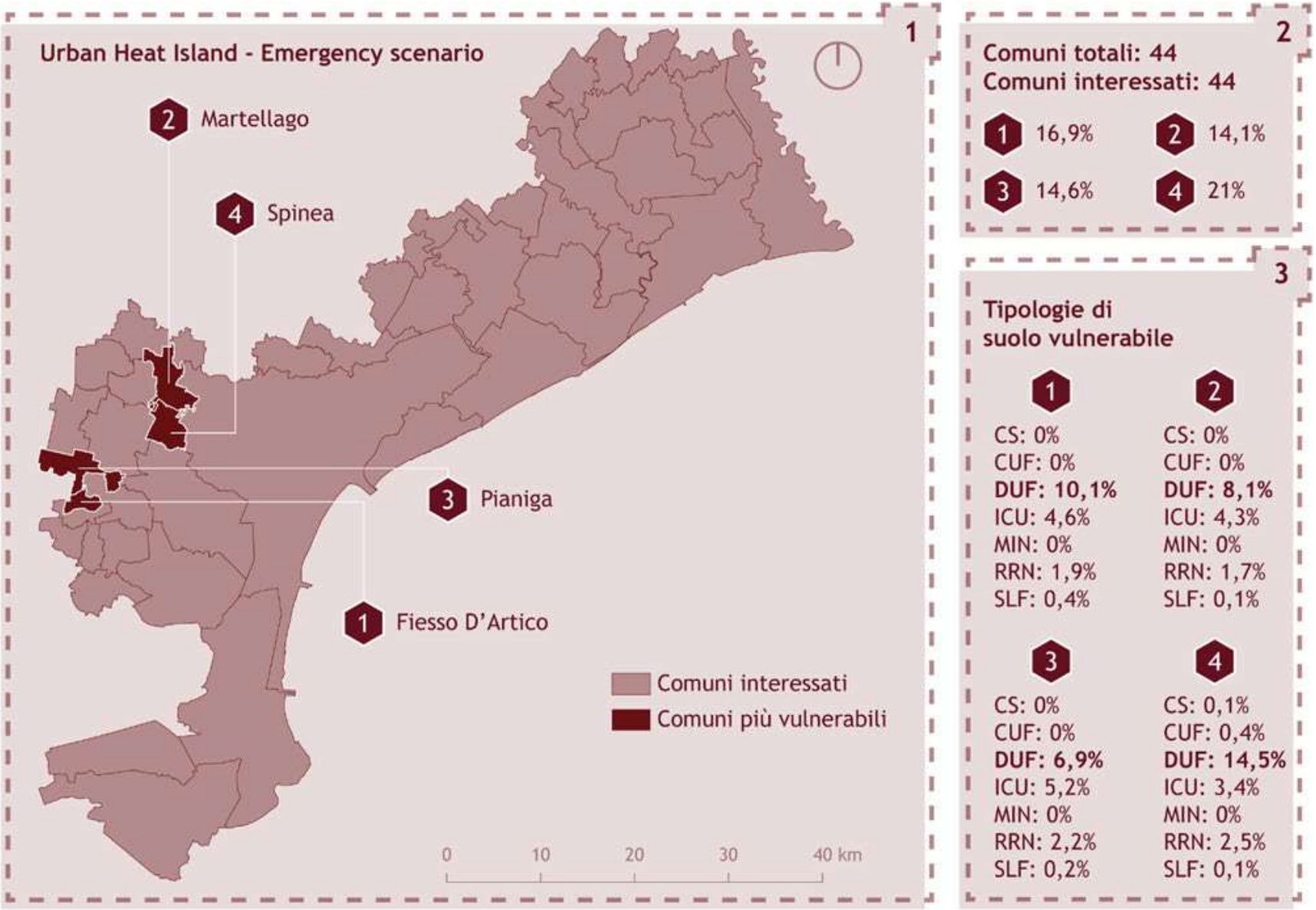
Towards operational support for local administrations





1. Extreme class vulnerability to urban heat island in an emergency scenario
2. Percentage of land vulnerable to UHI in the total territory, with respective criticality classes
3. Distribution of vulnerability levels in each impacted soil type

Towards operational support for local administrations

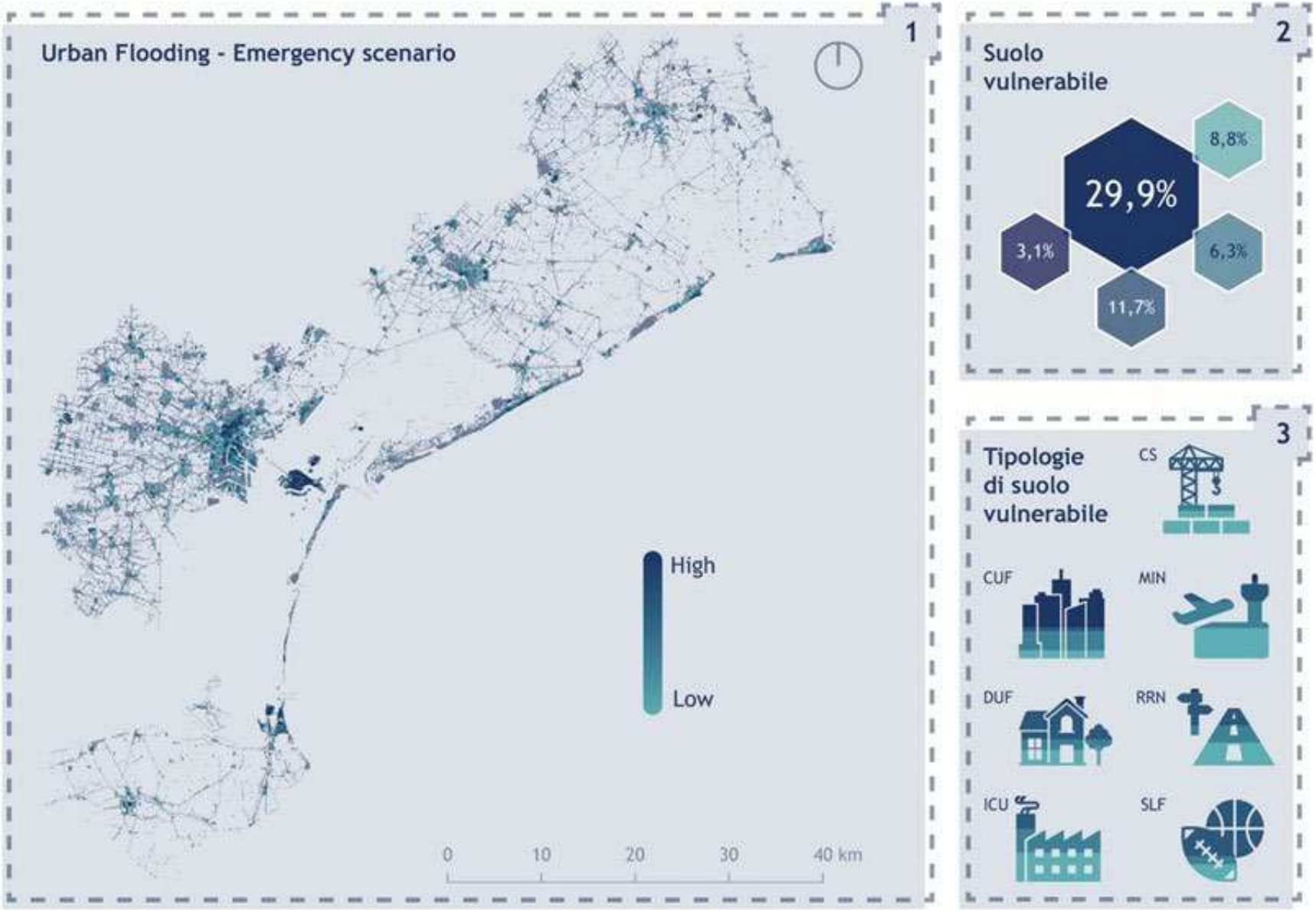


1. **CMVE municipalities vulnerable to the extreme UHI vulnerability class in an emergency scenario**

2. **Percentage of vulnerable soil for the most exposed municipalities**

3. **Percentage distribution of impacted land by land use class**

Towards operational support for local administrations

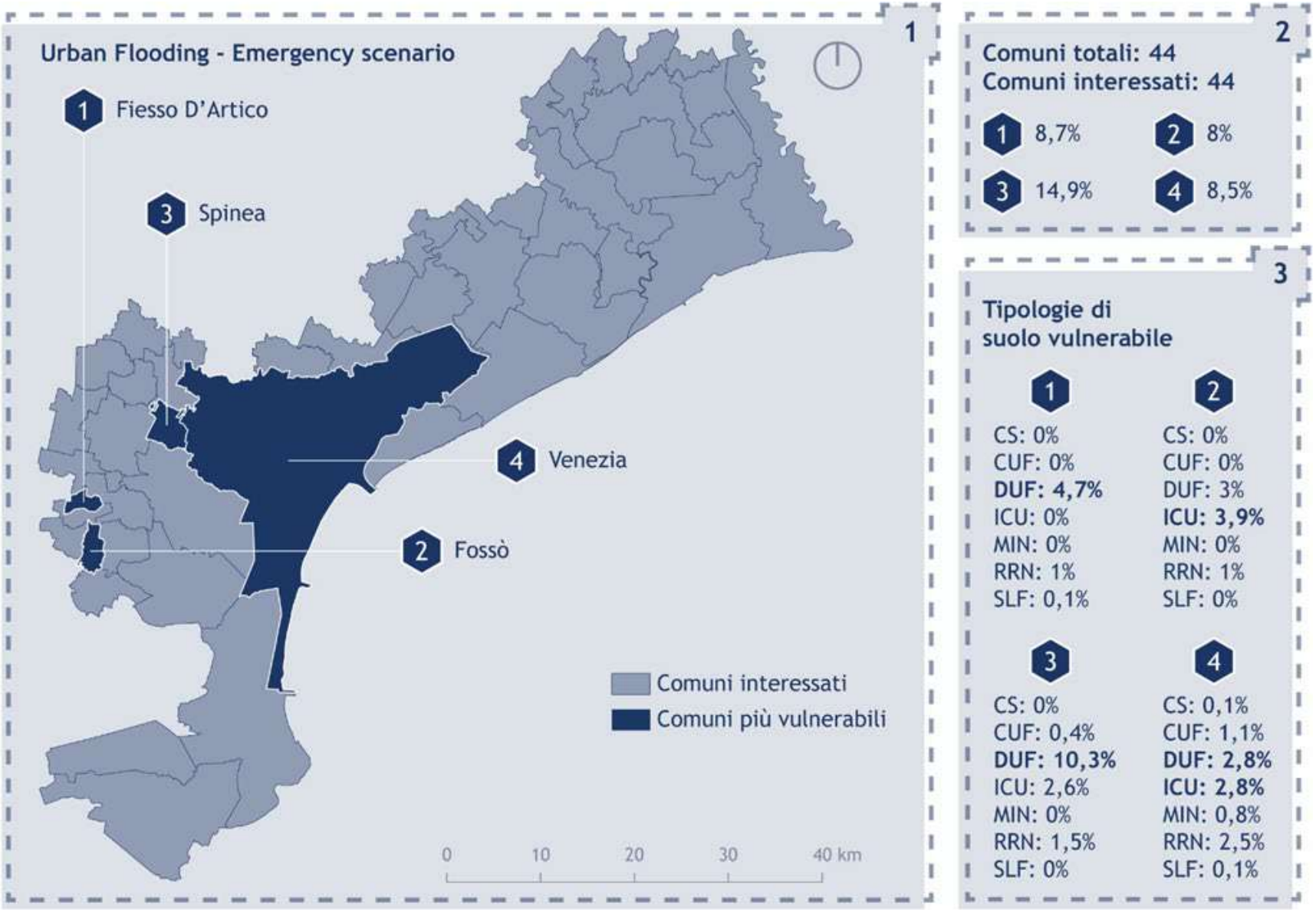


1. **Extreme class vulnerability to urban flooding in an emergency scenario**

2. **Percentage of land vulnerable to UF on the total land area, with respective criticality classes**

3. **Distribution of vulnerability levels in each impacted soil type**

Towards operational support for local administrations



1. **CMVE municipalities vulnerable to the extreme class of vulnerability to UF in an emergency scenario**
2. **Percentage of vulnerable soil for the most exposed municipalities**
3. **Percentage distribution of impacted land by land use class**

Adaptation Strategies

SECAP's Adaptation Strategies are based on local objectives and the transboundary planning framework.

The document aims at developing a strategical frame to adapt homogeneous territories.

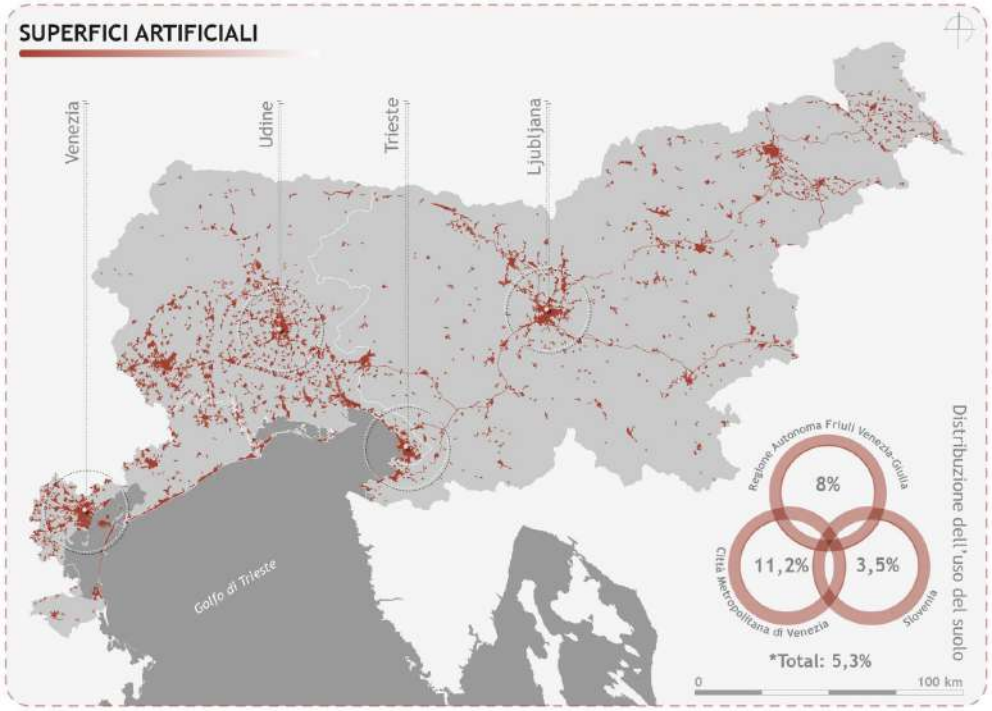
SECAP's Strategies seeks 3 objectives:

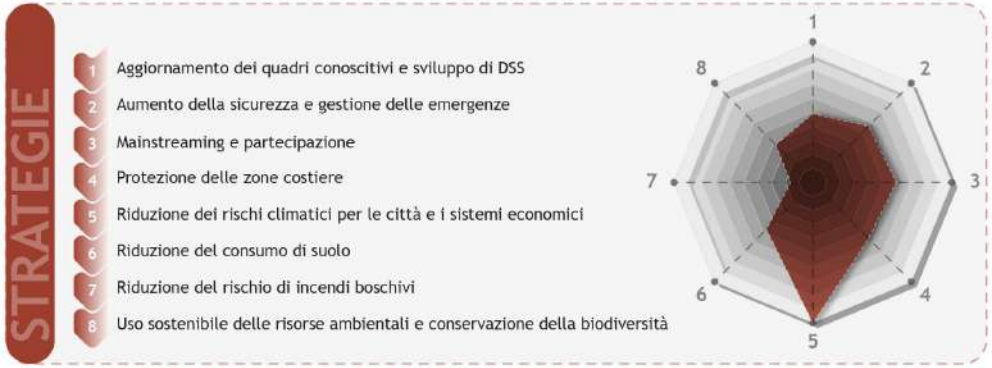
1. **Updating knowledge frameworks and developing a decision support system**

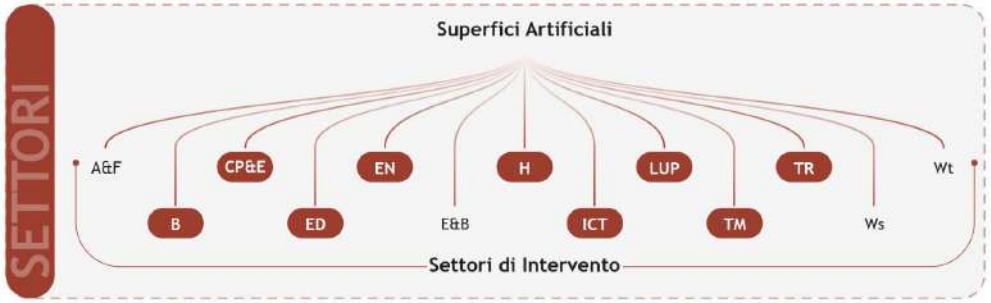
2. **Enhancing safety and emergency management**

3. **Mainstreaming and participation**

The Structure of the Strategies







Namely, the strategies are matched with the single Land Use, basing on the performance evaluation made by territorial decision makers.

1. **Updating knowledge frameworks and developing a decision support system**
2. **Enhancing safety and emergency management**
3. **Strengthening Mainstreaming and Participation**
4. **Protection of coastal zones**
5. **Reducing climate risks for cities and economic systems**
6. **Reduction of land consumption**
7. **Reducing the risk of forest fires**
8. **Sustainable use of environmental resources and conservation of biodiversity**

Guidelines for Municipalities

1. Introduction

1.1. The Sustainable Energy and Climate Action Plan - SECAP

1.2. The New Covenant of Mayors for Climate and Energy

1.3. What is a SEAP/SECAP

1.4. The accession procedure and signatories' commitments

2. Slovenian policies, strategies and plans to reach the goals by 2030

3. The experience of the SECAP Project in supporting the drafting of a SECAP

3.1. The SECAP Project Pilot Actions

3.1.1. PA1: Municipality of Trieste

3.1.2. PA2: Municipality of Duino-Aurisina

3.1.3. PA3: Metropolitan City of Venice

3.1.4. PA4: Metropolitan City of Venice: Realisation of the external green areas and support of hydraulic invariance for the "Casa dell'Energia" complex.

3.1.5. PA5: Municipality of Ajdovščina

3.1.6. PA6: Municipality of Idrija

3.1.7. PA7: Municipality of Koper

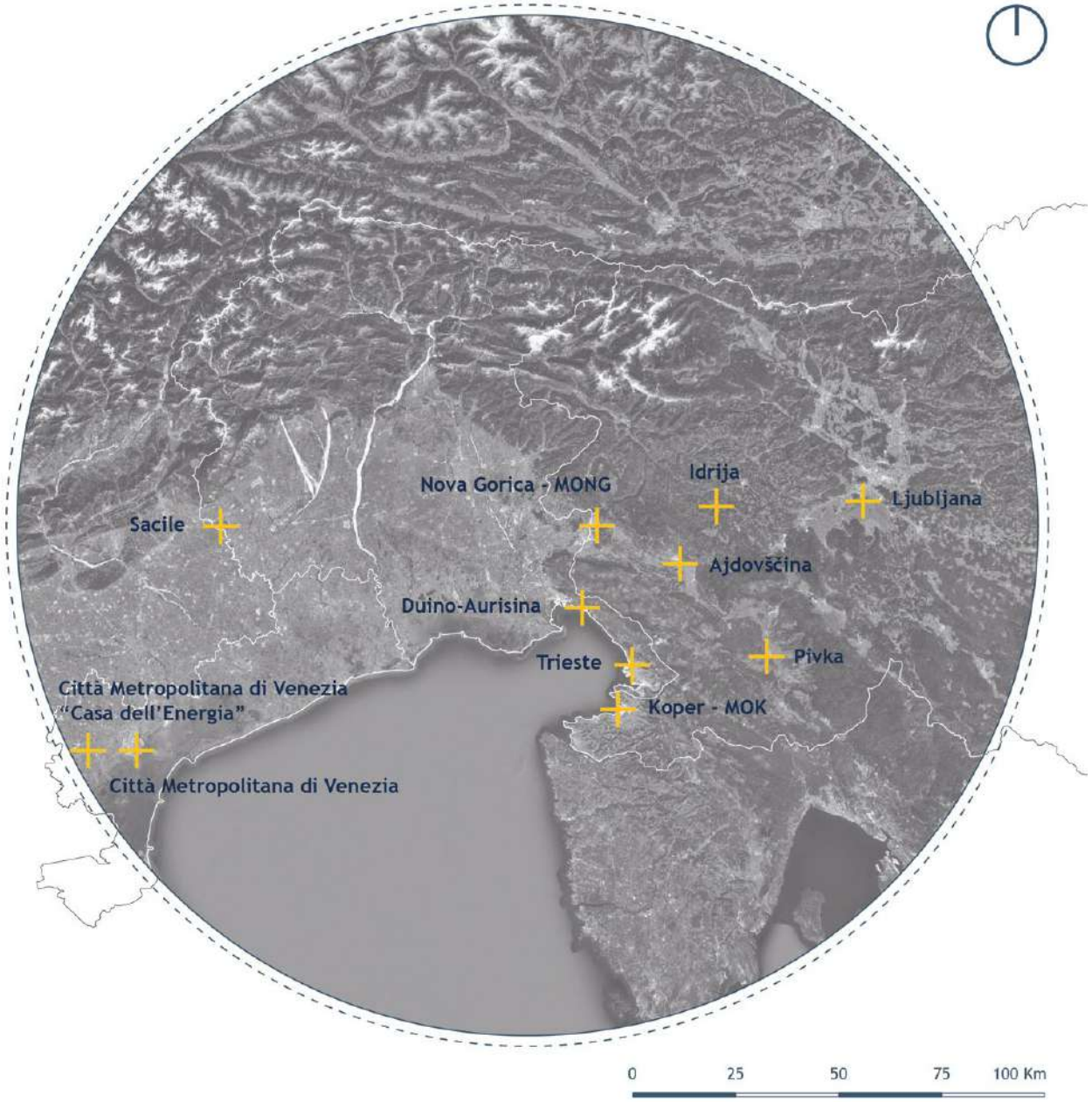
3.1.8. PA8: Municipality of Nova Gorica

3.1.9. PA9: Municipality of Pivka

4. Conclusions

5. Annex I - Tables

Guidelines for Municipalities



SECAP's Guidelines for Municipalities are based on the project Pilot Actions experience. Namely:

- Municipality of Trieste
- Municipality of Duino-Aurisina
- Metropolitan City of Venice
- Municipality of Ajdovščina
- Municipality of Idrija
- Municipality of Koper
- Municipality of Nova Gorica
- Municipality of Pivka

Grazie!

carlo.dallomo@iuav.it

PLANNING CLIMATE CHANGE LAB

Università Iuav di Venezia