



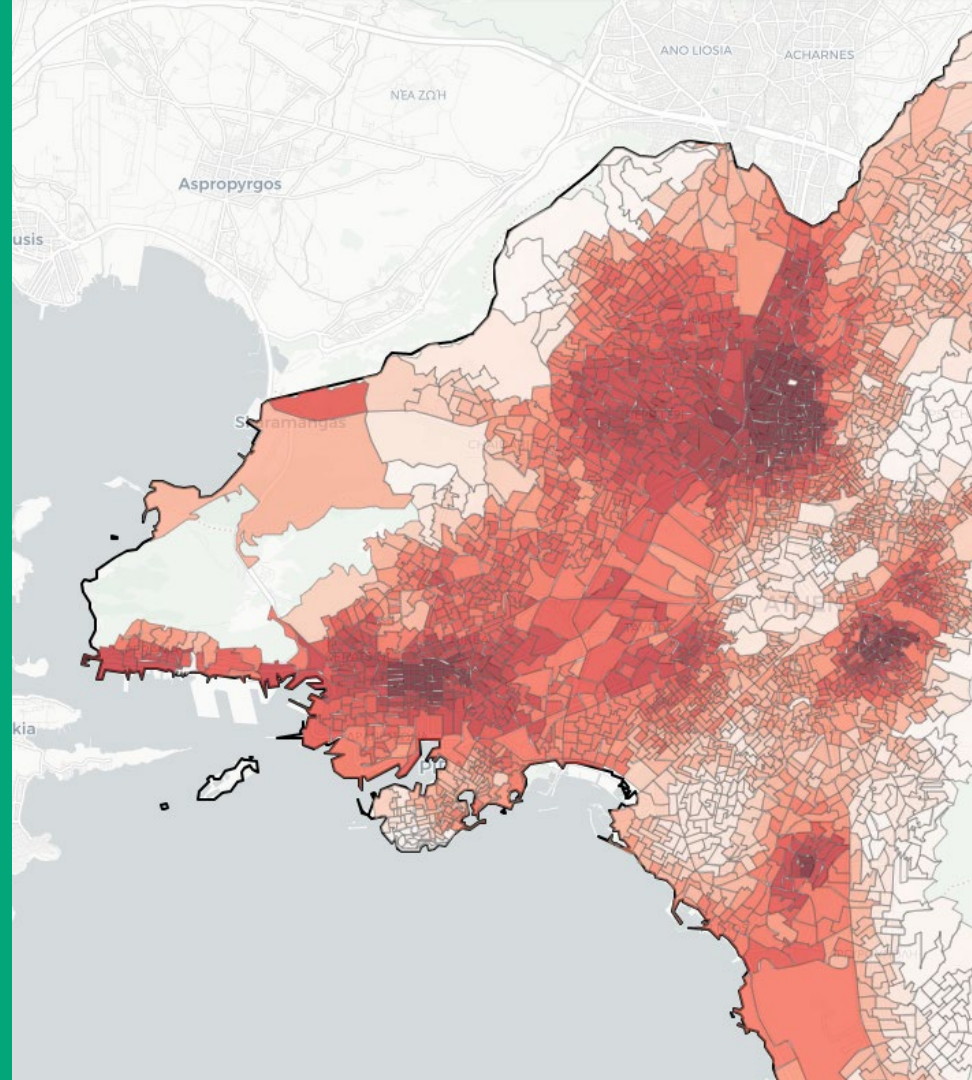
Urban Heat analisis and Resilience tool for Piraeus, Greece

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**Beatriz
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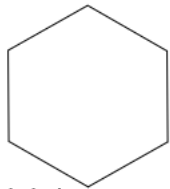
**Gloria
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**Miguel
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**Carmen
Sánchez-Guevara**



**Luis J.
Sánchez Aparicio**



**Sofía
Lado Masson**



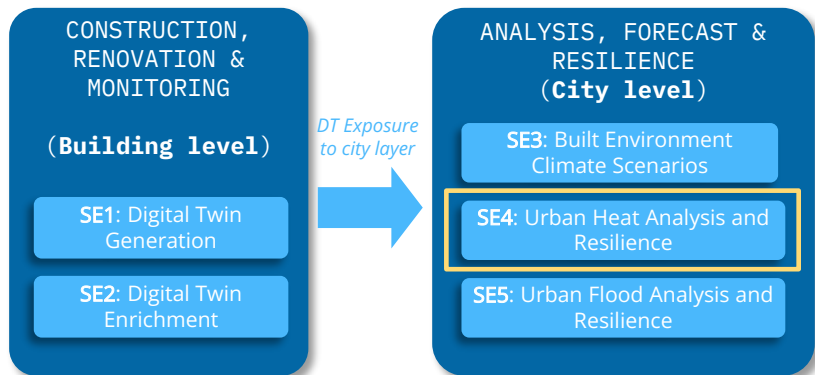
**Patricia
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HEAT

BUILDSPACE project

BUILDSPACE APPLICATIONS



Technical Partners



Pilot



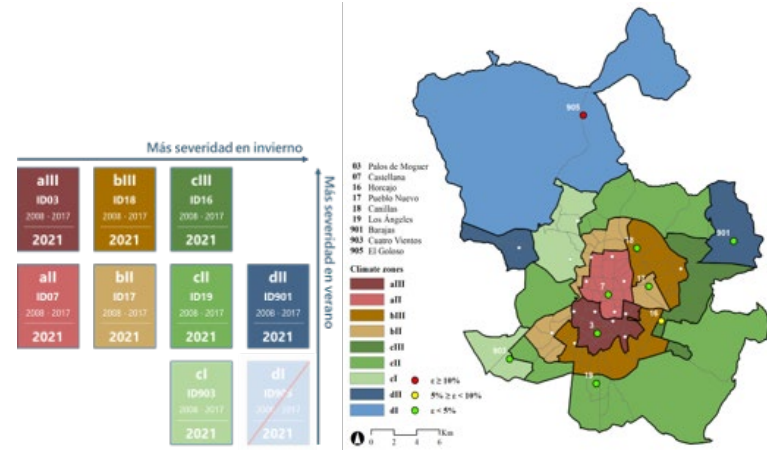
Municipality of Piraeus



Insights from SE4

Urban heat analysis and resilience

- SE4 aims to examine the **urban heat intensity** and distribution at a high spatial resolution while incorporating **vulnerability factors** to determine the **urban heat risk** under the present and future climate scenarios

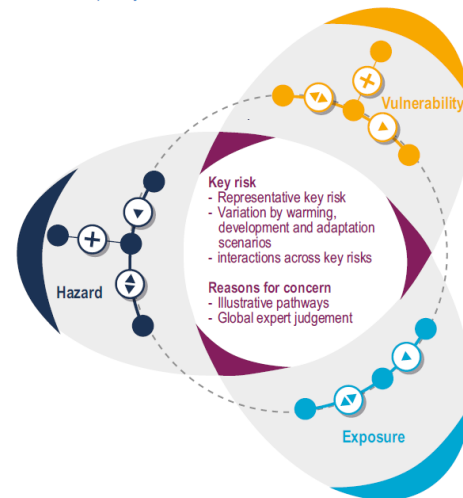


Modelo empírico de la isla de calor urbana de Madrid para su integración en la simulación energética de edificios (Núñez-Peiró, 2022)

Urban heat RISK

- **RISK** The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. Risk can arise from **potential impacts** of climate change as well as human responses to climate change.

(b) AR6 additions: response risk and complexity



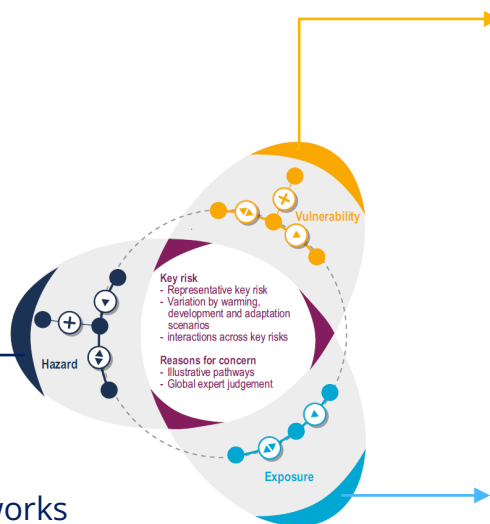
IPCC, 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Pörtner et al., 2022)



Input data:

- ▮ Spatial resolution
 - ▲ Census tract

- ▮ Non-conventional monitoring networks
 - ▲ CWS
- ▮ Copernicus Datasets
 - ▲ NDVI
 - ▲ DEM



eurostat  /National databases

▮ Socio-economic data

- ▲ Income
- ▲ Level of education
- ▲ Unemployment
- ▲ People with no house ownership
- ▲ Women as breadwinners
- ▲ Women single parent

▮ Demographic data

- ▲ Age: People over 65, 75; under 10 years
- ▲ Inmigrants
- ▲ Gender

▮ Demographic data

- ▲ Population density

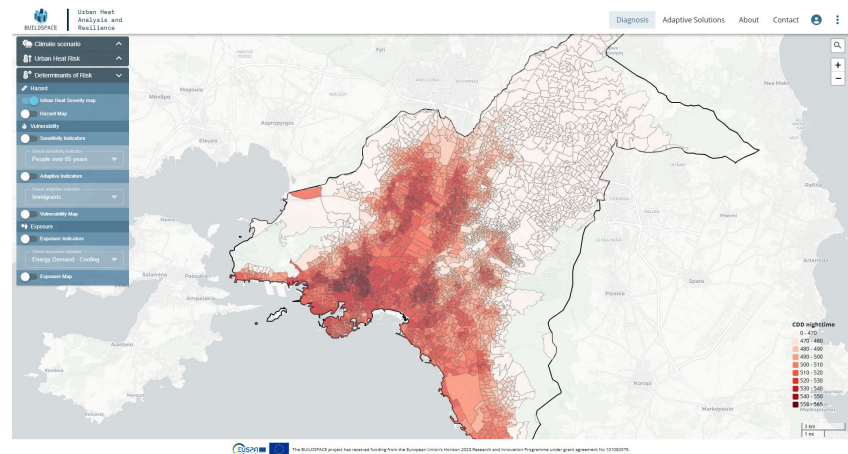
▮ Building data

- ▲ Building energy performance
- ▲ Year of construction
- ▲ Buildings characteristics: height, number of floors, building footprint



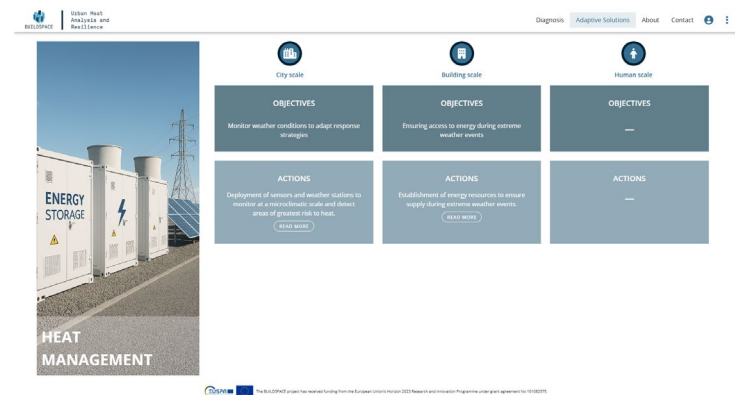
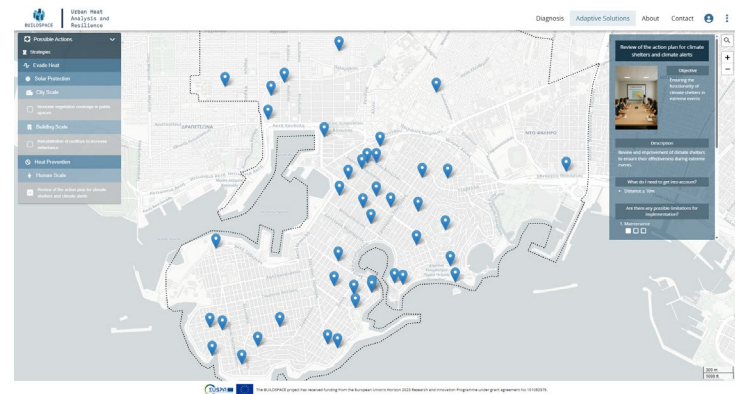
BUILDSPACE SE4 functionalities

- ▶ **Urban Heat Risk** map with statistical information at census tract scale
- ▶ **Hazard, Vulnerability** and **Exposure** maps
- ▶ Delimitation of **Hotspots**: identification of priority areas for intervention.
- ▶ **Future climate scenarios** and weather files for energy building demand analysis.



SE4 functionalities

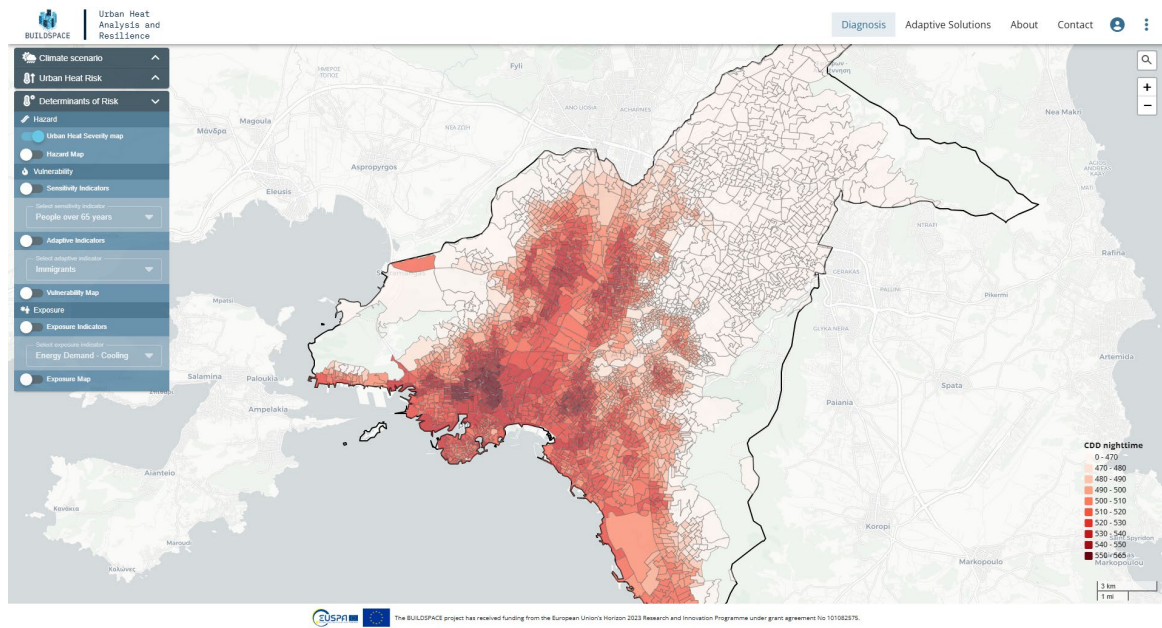
- Estimation and map visualisation of the **current and future Energy Demand** of the residential building stock, using EPBD-based algorithms
- Decision Support Tool**: Adaptive Solutions catalogue to provide guide on how to achieve more resilient cities.





Demo Session: The case of Piraeus

SE4 Application Demo



<https://se4.internal.buildspaceproject.eu/>



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