



## HARMONIA

System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools

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**eurac**  
research



Institute of  
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National Research Council of Italy



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Commission



## HARMONIA

Development of a Support System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools

*LC-CLA-19-2020: Integrated GEOSS climate applications to support adaptation and mitigation measures of the Paris Agreement*

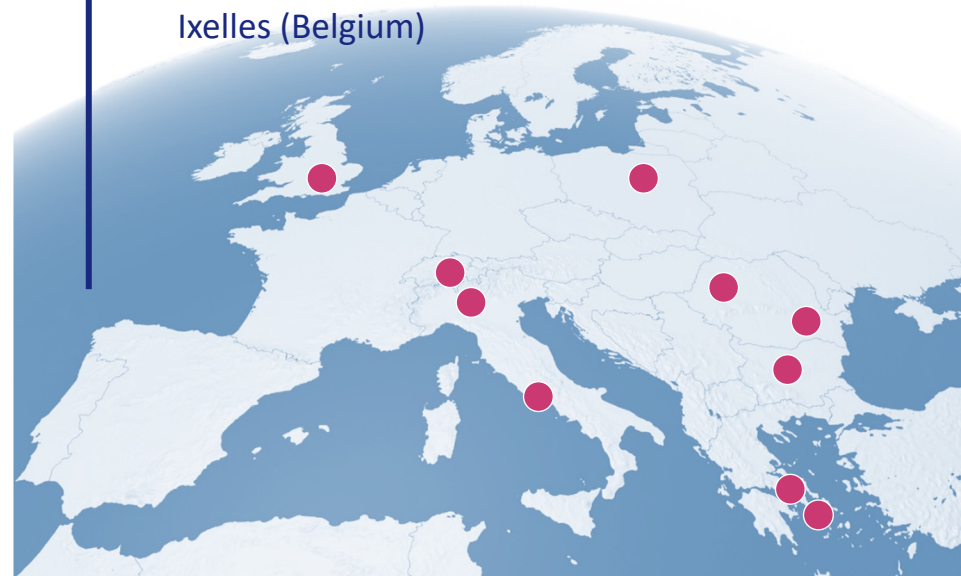
### 22 PARTNERS

4 Academies  
9 Companies  
4 Research institutes  
1 NGO

4 Municipalities

### 4 PILOT CITIES

Milan (Italy)  
Sofia (Bulgaria)  
Piraeus (Grece)  
Ixelles (Belgium)

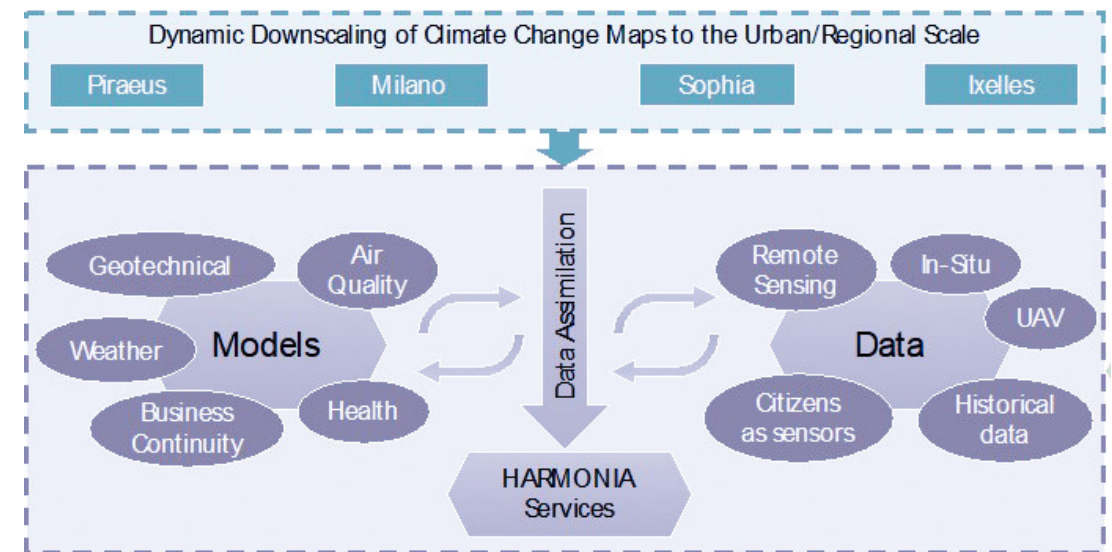




## HARMONIA PURPOSE



**HARMONIA capitalises on a wealth of existing Earth Observation (EO) datasets and services** –including GEOSS, Copernicus, ESA TEPs services and other ESA data and services, as well as National Data Cubes – with ensemble modelling, socio-economic and in-situ data at the spatial and temporal scales **relevant for the urban environment...**

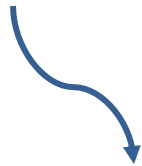




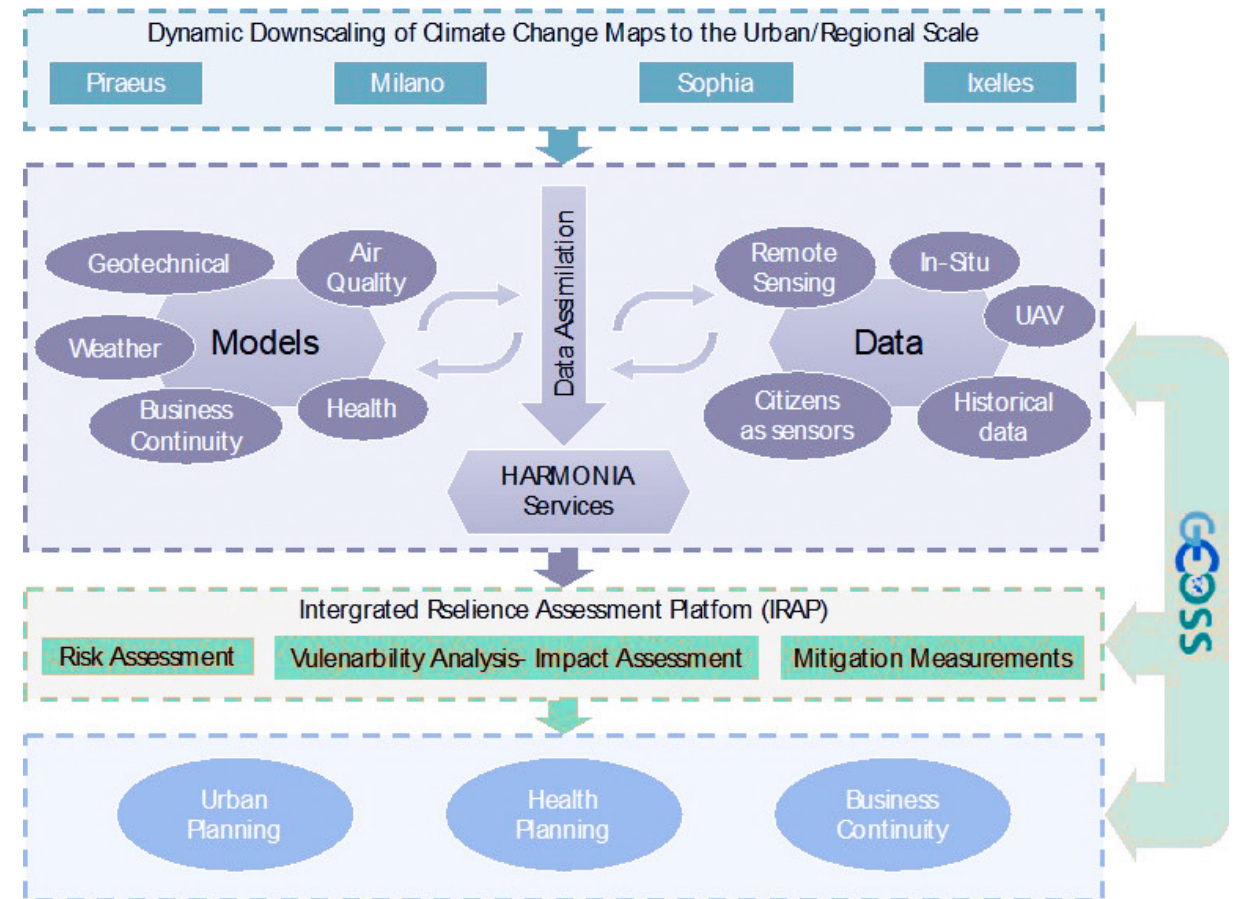
## HARMONIA PURPOSE



...to deliver an **Integrated Resilience Assessment Platform (IRAP)**

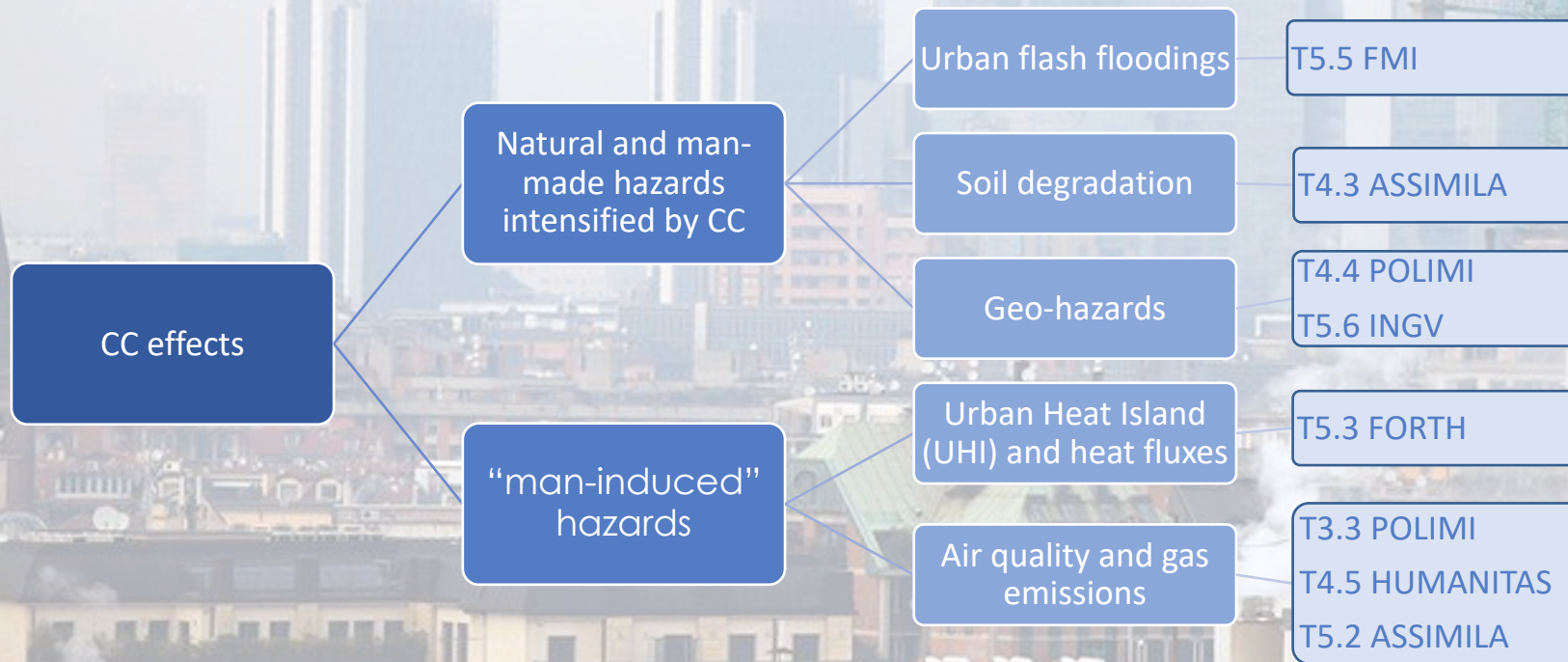


a system that allows stakeholders to model a range of **planning options** against a number of **CC scenarios** towards targeted applications in order to **mitigate CC effect** in urban areas, helping deliver resilient cities for current and future generations





## CC FRAMEWORK

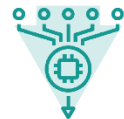




## HARMONIA APPROACH

HARMONIA's main objective is to reorganise and integrate the huge amount of data already available and to make the best use of existing monitoring technologies and geospatial services for urban hazard assessment and disaster risk management.

**Data input**  
**Data types** (eg satellite, in-situ, socio-economic, citizen observatories)  
**Data sources** (existing open services such as GEOSS, Copernicus services, ESA TEPs; local/regional/national statistical and geospatial data; one-off campaigns, commercial; research)  
**Access routes** (eg online open access, proprietary, commercial)  
**Licensing issues/constraints**

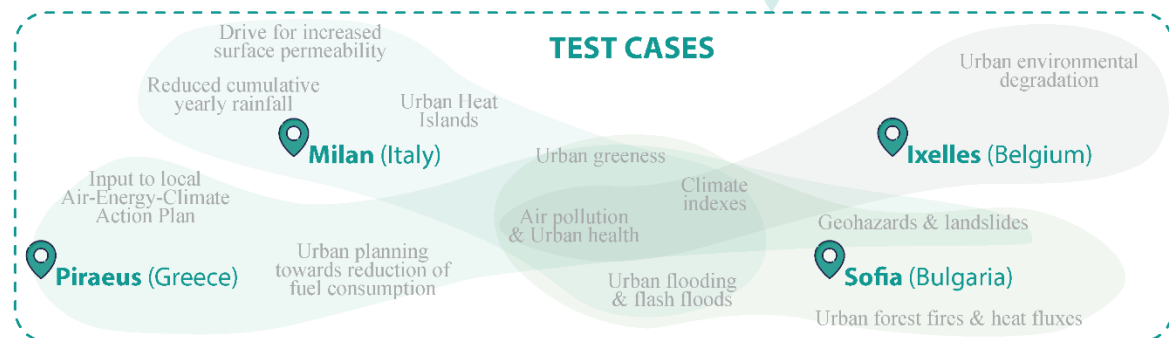
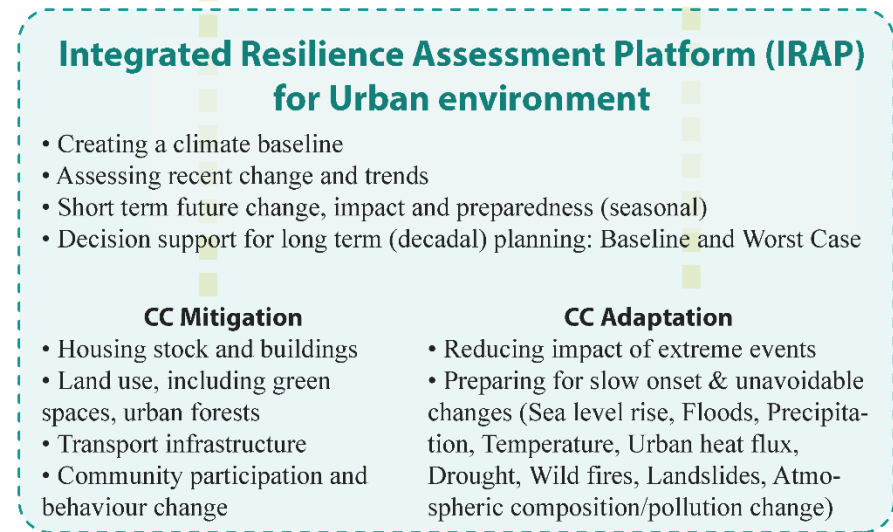


**Data preparation**  
 Climate indexes, Essential variables, Downscaling, Data integration, Data annotation, Data cubes



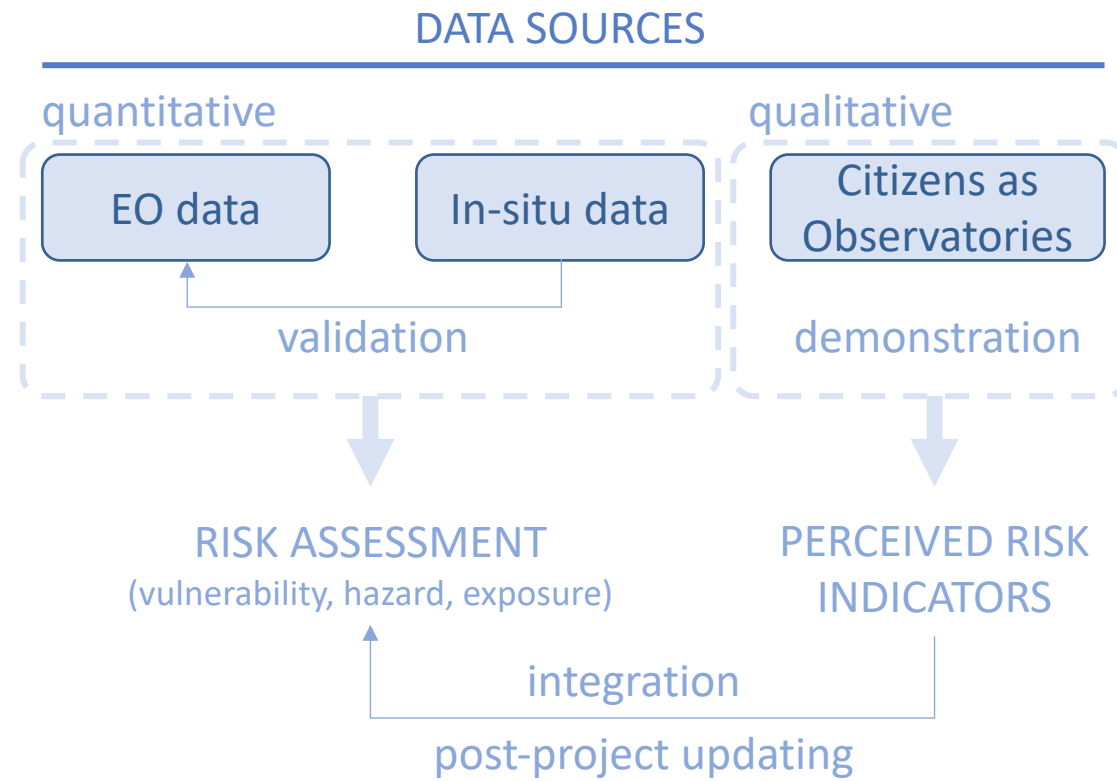
**Intelligence framework**

- Atmospheric forcing & weather reanalysis
- CC at city level
- Ecological integrity indices
- Geotechnical models & CC
- Air quality & urban health
- Urban mobility & CC
- AI/ML tools for adaptation





## HARMONIA APPROACH





**THANK YOU FOR  
YOUR ATTENTION**



## Get in touch!

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