

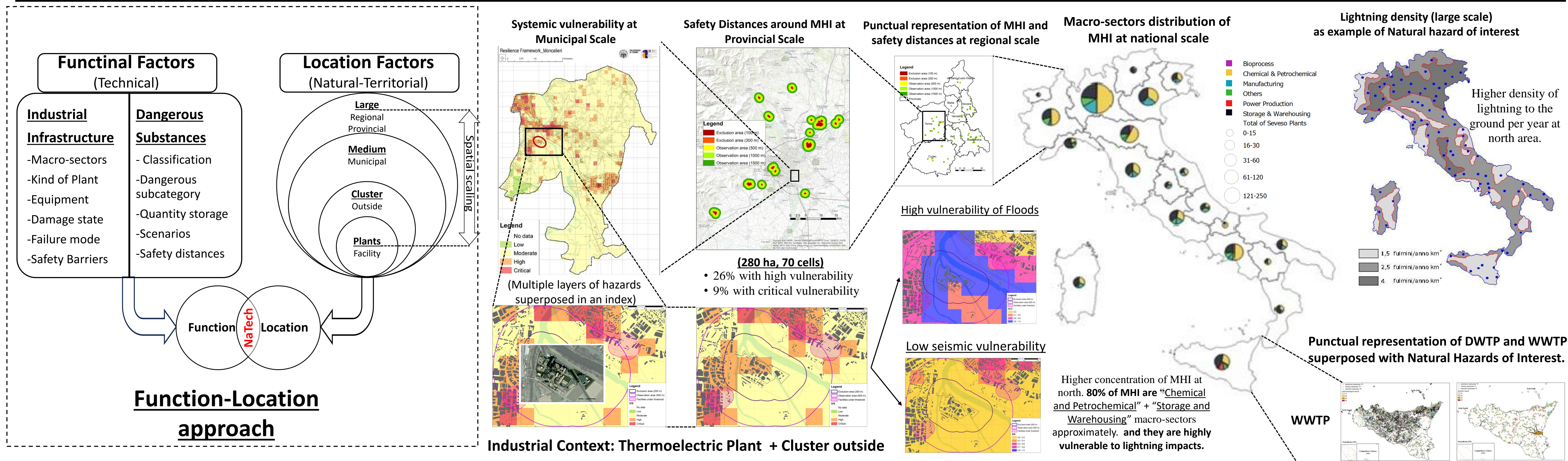
Spatial vulnerability characterization between industrial infrastructure and territory using a multi-hazard, multi-scale approach

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Introduction

- Climate change trends threaten to increase the annual damage to critical infrastructure in Europe, with special mention for the industrial sector.
- To address this issue the European Commission issued Directive (EU) 2022/2557 (on the resilience of critical entities).
- Member States must identify and assess their vulnerabilities, considering all potential hazards in compliance with sector-specific Union legislation, such as, Directive 2012/18/EU (on the control of major-accident hazards involving dangerous substances) or Directive 2007/60/CE (on the assessment and management of flood risks).
- Infrastructural assets, depending on their specific functionalities, react differently to threats inherent to their locations, with different potential scenarios which may impact the people, the environment and the entity itself.
- To test the function-location approach at different spatial scales, the Major Hazards Industries (MHI) were used to systematically characterize vulnerabilities in multi-hazard frameworks.
- The methodology is being extended to other industrial critical entities such as drinking and wastewater treatment plants (DWTP and WWTP).



Conclusions: The systematic approach (function-location) provides a bi-directional spatial vulnerability characterization for critical infrastructures and their surrounding territories. The study used MHIs as a pilot case, to analyze some functional factors inherent to these kind of assets, and their interaction with natural hazards. The methodology can be replicated to other critical assets, like Water Treatment plants. In addition to the methodological value, the multi-scale approach contribute to increase the awareness of stakeholders at different organizational levels offering support to the decision-making and contributing to strength the resilience of critical infrastructures.

