

# Evaluating the effectiveness of risk reduction strategies

Understanding natural hazard risk management in Italy

## National Flood Impact Model “NatFIM”



**QUESTION** How can we evaluate impacts / damages caused by a flood?



**OBJECTIVE** NatFIM aims to develop a model for assessing the impacts (damages) of flood scenarios. The model is characterized as "Italian" due to its specific focus on the national hazard and vulnerability context, as well as the availability of input data at a national scale.



**DESCRIPTION** NatFIM is a GIS tool that, given a flood scenario, provides an assessment of the impacts on exposed categories as defined by the Floods Directive. The model's essential features are:

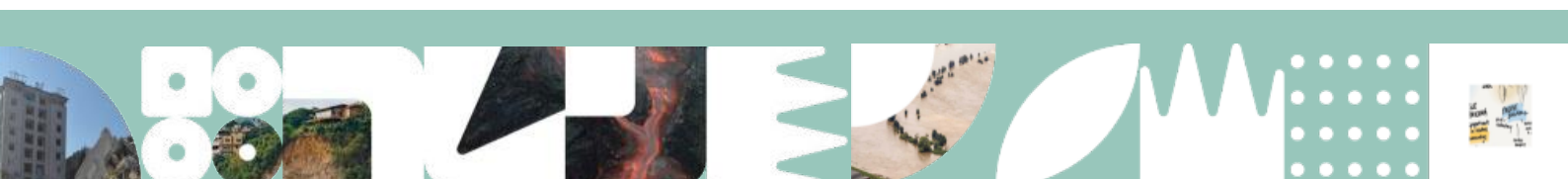
- Quantitative assessments wherever possible.
- Monetary evaluations where feasible and appropriate.
- Primarily focuses on direct damages, with indirect damages assessed in sectors where they are highly relevant.
- Results are provided at the census section scale and, where feasible, at more detailed scales (e.g., individual exposed elements).

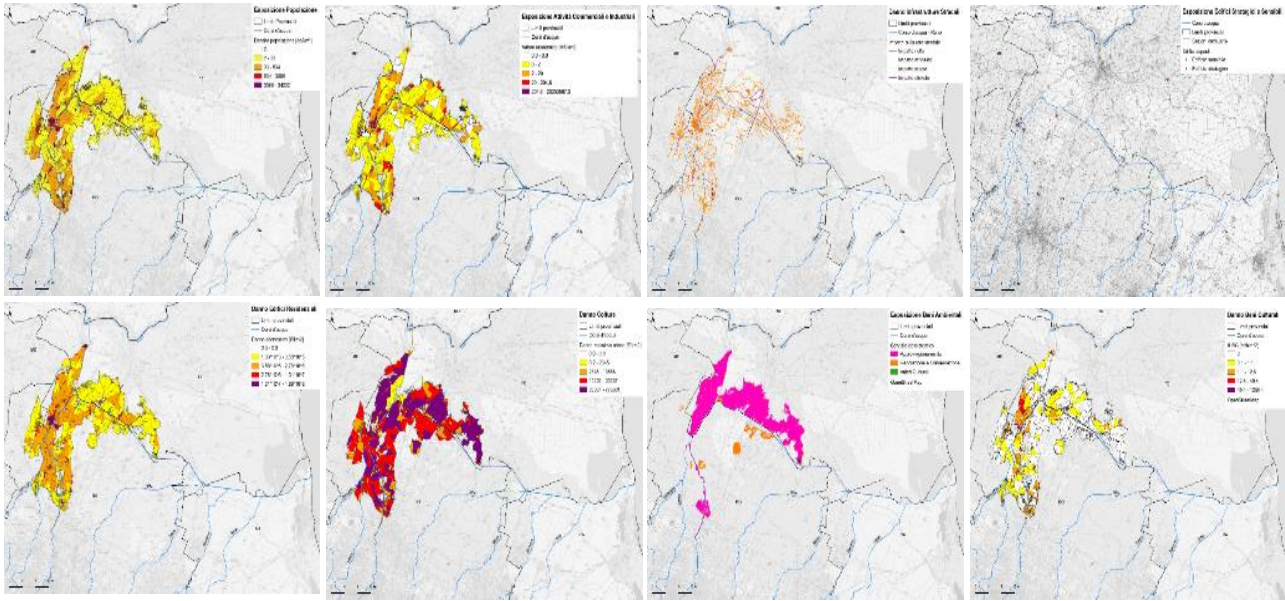
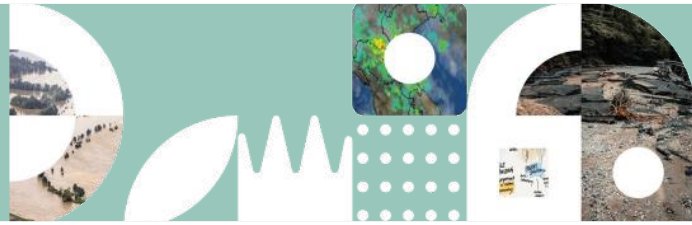


**HOW IT WORKS** NatFIM first assesses the exposed values and then applies damage models to estimate the expected impacts for each exposed category. This flexible approach makes NatFIM adaptable both in structure and usage. Specifically:

- The global model consists of independent modules that are easily updatable, modifiable, and replaceable.
- The exposure assessment can be used independently of the hazard type (where damage models are hazard-specific).
- Users can select which categories to analyze according to their objectives.

A starting point for this product is already available, developed as part of the MOVIDA project ([sites.google.com/view/movida-project](https://sites.google.com/view/movida-project)), which provides a model for exposure and damage assessment applicable at the district scale, particularly for urban and riverine floods.





Results – example (NatFIM) Implementation of the procedure on all APSFR (District and Regions)

Contacts



Francesco Ballio  
Politecnico di Milano  
[francesco.ballio@polimi.it](mailto:francesco.ballio@polimi.it)



Institutions



UNIVERSITÀ  
DI TORINO



UNIVERSITÀ  
DEGLI STUDI  
DELL'AQUILA



IUSS  
Scuola Universitaria Superior



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE



POLITECNICO  
MILANO 1863



UNIVERSITÀ  
DEGLI STUDI  
DI BRESCIA



Università  
degli Studi  
di Ferrara



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA



Consiglio Nazionale  
delle Ricerche

“ Impact-based decision making allows the prioritization of strategies for targeted future investments.”

