

## EUROPEAN PILOT PROJECT

# INTEGRATED TECHNIQUES FOR THE SEISMIC STRENGTHENING AND ENERGY EFFICIENCY OF EXISTING BUILDINGS

Methodologies for assessing  
the combined effect of  
upgrading

ACTION 3



Review of **methods to assess improvement** of seismic safety and energy efficiency



**Definition of a method** for a combined assessment of the upgrading



Implementation of methods on **case studies**

## PILOT PROJECT ACTIONS

1. Overview and classification of technologies for seismic strengthening and energy upgrading of existing buildings
2. Analysis of technologies for combined upgrading of existing buildings
- 3. Methodologies for assessing the combined effect of upgrading**
4. Regional impact assessment and proposals in support of an Action Plan
5. Stakeholders' engagement

# ASSESSING THE COMBINED EFFECT OF UPGRADING

EU Member States and industry need to know what benefits they gain by combining seismic safety and energy efficiency upgrading technologies. Action 3 will undertake a review and classification of existing methodologies for seismic and energy retrofit assessment by renovation type, essential exposure indicators, method effectiveness, speed of implementation and ability to consider cost and service disruption. The state-of-the-art review will serve as a point of reference towards a novel integrated method for the assessment of the combined upgrading in economic terms. The new method will consider the expected annual losses and energy consumption costs in a life cycle perspective. Case studies will demonstrate the application of the proposed method to representative renovated buildings including cultural heritage ones.

Action 3 fills a knowledge gap with its codified and representative method. The innovative approach matches safety and sustainability in line with the UN 2030 Agenda for Sustainable Development. Tools, guidelines, and case studies within Action 3 serve to enable the Renovation Wave initiative and contribute to the understanding of cost benefits in combined renovation, boosting renovation rates directly in support of the European Green Deal and the Energy Performance of Buildings Directive. Furthermore, integrating life cycle thinking in the proposed assessment method supports the New Circular Economy Action Plan.

