



Seismic and energy retrofit of buildings

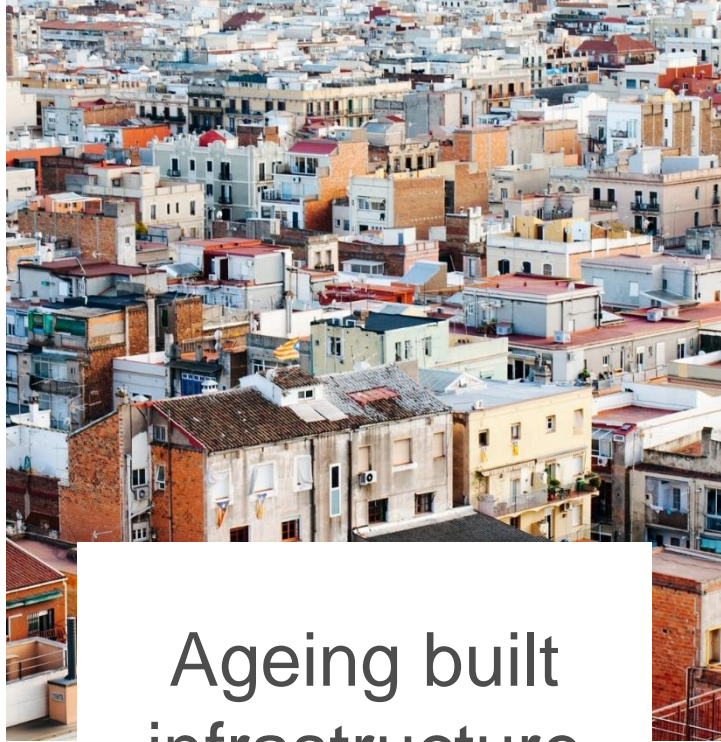
Overview of the pilot project

Georgios Tsionis

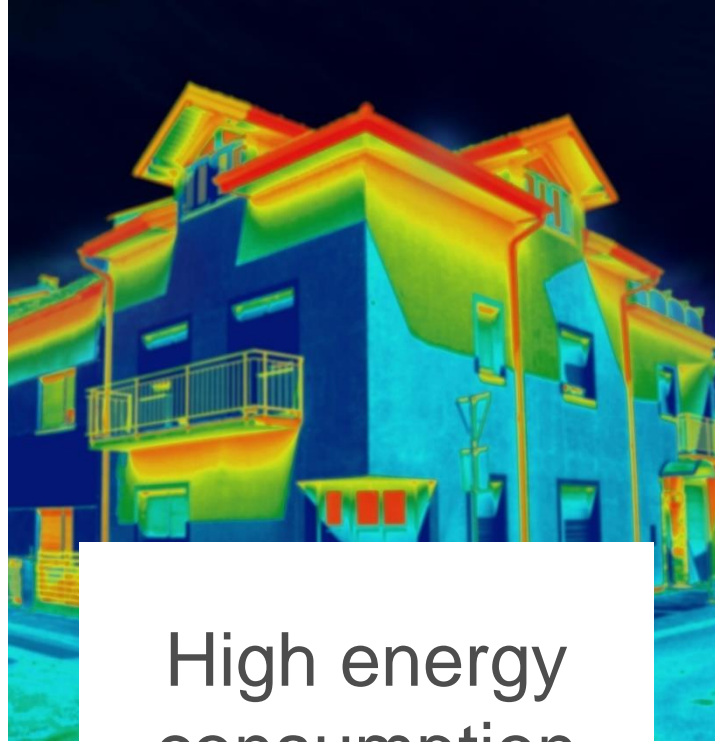
European Week of Regions and Cities

20 October 2020

European building stock



Ageing built infrastructure

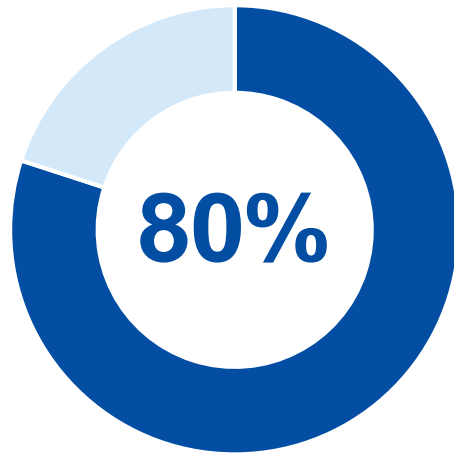


High energy consumption

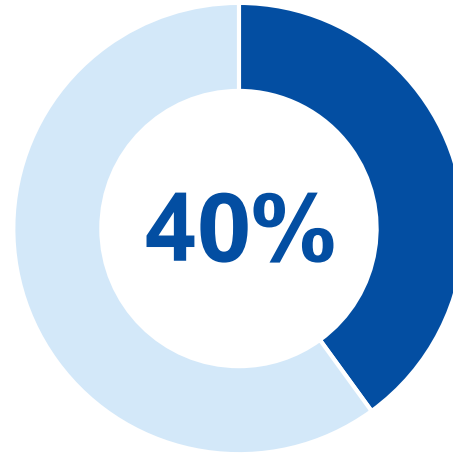


Vulnerable to earthquakes

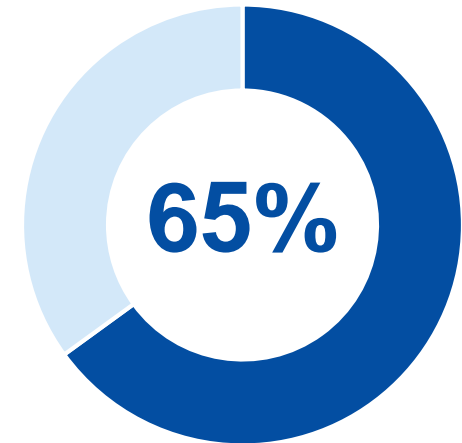
European building stock



**Buildings in EU
constructed
before 1990**



**Buildings in EU
located in seismic
regions and
designed with
inferior safety
requirements**



**Buildings in
seismic regions
that need both
energy and
seismic retrofit**

Policy goals

Green Deal

Renovation wave

New European
Bauhaus

Energy Performance of
Buildings



Policy goals



Action Plan on the
Sendai Framework

Sustainable
Development Goal 11

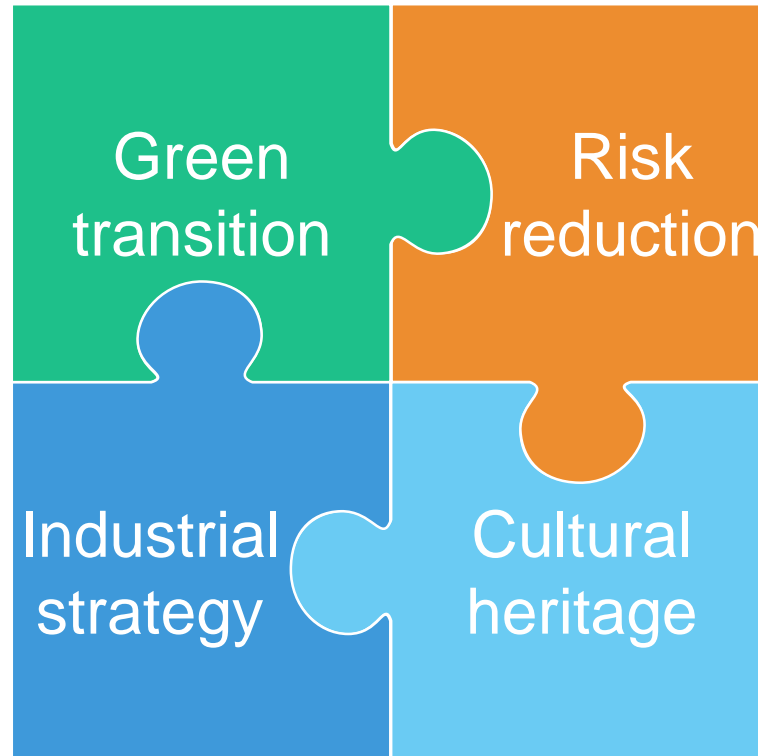
Policy goals

New Industrial
Strategy for Europe

New Circular Economy
Action Plan



Policy goals



European Framework
for Action on Cultural
Heritage

European Agenda for
Culture



European Pilot Project

Integrated techniques for the seismic strengthening and energy efficiency of existing buildings



Scope

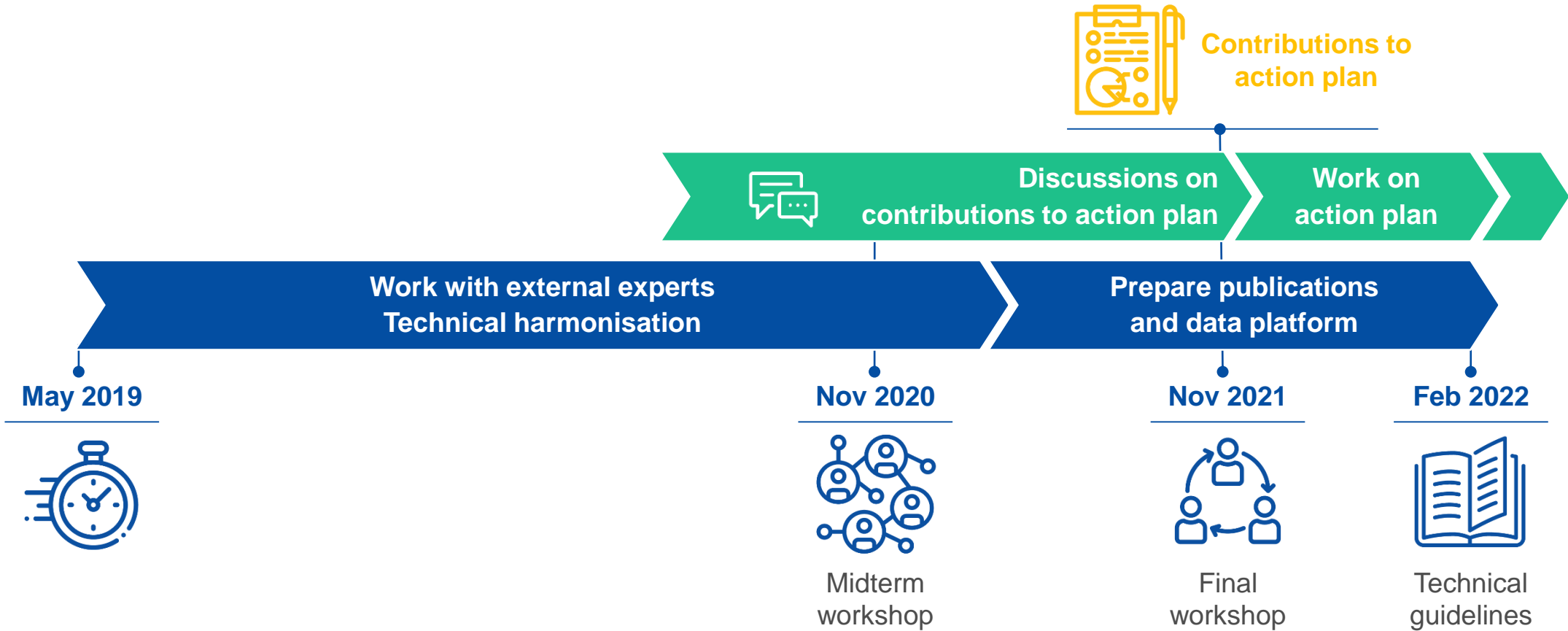
Define solutions that, at the same time and in the least invasive way, can both reduce seismic vulnerability and increase energy efficiency in such a way to produce a significant positive environmental impact



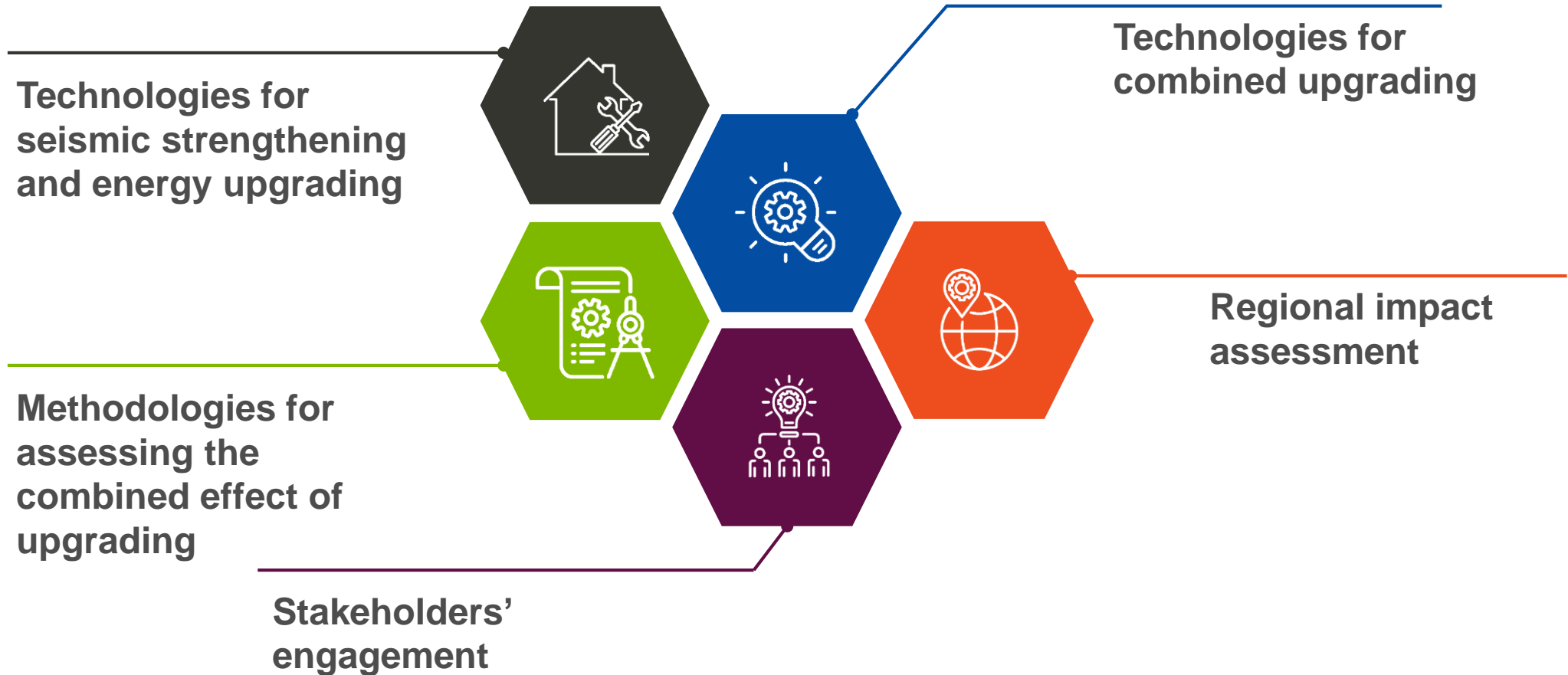
Objectives

- Define tools and guidelines
- Stimulate the use of integrated solutions
- Create awareness
- Increase resilience of the built environment

Timeline



Pilot project actions



Action 1

Overview and classification of technologies for seismic strengthening and energy upgrading of existing buildings



Identification of **building typologies** that require renovation



Review of technology options for the **seismic upgrading** of existing buildings



Review of technology options for the **energy upgrading** of existing buildings

Action 2

Analysis of technologies for combined upgrading of existing buildings



Review of **technology options** for combined seismic and energy upgrading



Analysis of **novel technologies** for combined seismic and energy upgrading

Action 3

Methodologies for assessing the combined effect of upgrading



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**

Action 4

Regional impact assessment and proposals in support of an action plan



Identify **priority regions for renovation** based on risk and socio-economic indicators



Review **implementing measures**



Identify and compare **scenarios for intervention**

Action 5

Stakeholders' engagement



Involvement during the project through workshops on technical and policy issues



Dissemination and outreach



Open and free data to support regional policies

Output

- ▶ Building typologies most needing upgrading
- ▶ Classification of technologies
- ▶ Selection of best combined renovation technique
- ▶ Method to assess the benefits gained from integrated retrofit

Output

- ▶ Regions where renovation can achieve highest impact
- ▶ Retrofit scenarios and impact analysis
- ▶ Web platform for sharing data, knowledge and best practices

Pilot project workshop, 16-19 November 2020

- 16 Nov** Overview of pilot project and stakeholder's views
Regional impact assessment and proposals for an action plan
- 17 Nov** Overview and classification of technologies for seismic strengthening and energy upgrading of existing buildings
- 18 Nov** Analysis of technologies for combined upgrading of existing buildings
- 19 Nov** Methodologies for assessing the combined effect of upgrading
Conclusions, recommendations and further steps

The JRC Pilot Project team

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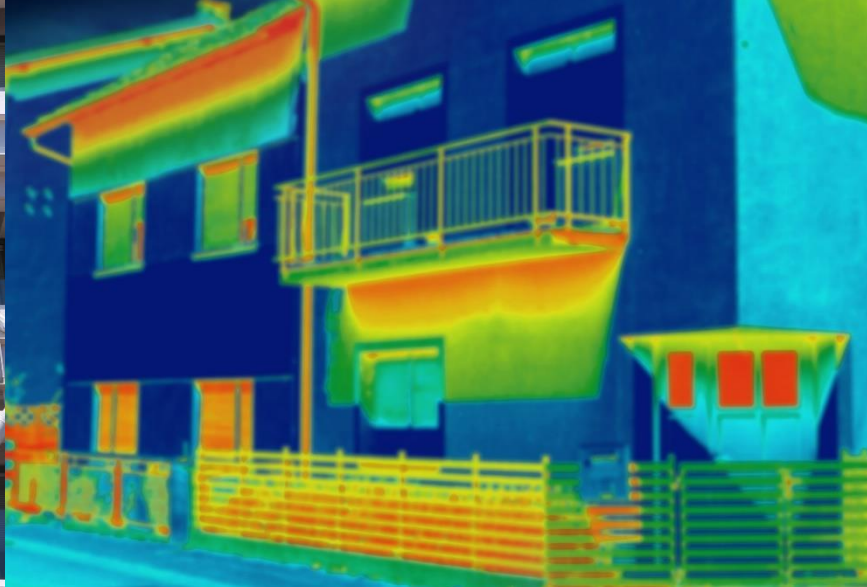
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#EURegionsWeek

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Thank you



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