



ENSURING AN INTEGRATED AND INCLUSIVE APPROACH TO RENOVATION

Policy implications of the EPBD recast

POLICY BRIEF

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The EPBD recast provides new opportunities for Member States in earthquake-prone regions to strategically support the uptake of seismic renovations alongside energy efficiency in the EU. Underpinning this endeavour means ensuring a robust policy framework that prioritises renovation of the worst-performing buildings in terms of both energy performance and seismic safety. Social acceptance is also a determining factor: this can be greatly enhanced by investing in co-design and participatory processes for the renovation of multi-family buildings and districts.

This paper identifies supportive EU policy initiatives and practical ways that the EPBD recast can be used to develop an integrated approach to renovations addressing both seismic safety and energy efficiency. It also describes outputs and findings from the Catania e-SAFE pilot which engaged social housing residents in a co-design process. Key findings are that community engagement should start from an early stage, and engage stakeholders in decision-making throughout the project.

This paper is presented by the e-SAFE H2020 consortium. The e-SAFE project aims to develop a new deep renovation system for non-historical reinforced concrete (RC) framed buildings, by combining energy efficiency and anti-seismic retrofitting actions that are affordable, improve the architectural image and reduce implementation time, costs and occupants' disruption.

Introduction

As well as threats associated with the onset of climate change, countries located in seismic-prone areas face additional risks. In the European Union (EU), seismic events lead to approximately 270 fatalities every year and a repair cost for residential EU buildings of €4.6 billion a year¹. Densely populated cities located in regions of moderate to high seismicity and vulnerability are the most prone to this risk.

The EU aims to achieve a fully decarbonised building stock by 2050. This requires at least doubling the renovation rate, and ensuring that 35 million building units are renovated by 2030 in the EU². For the first time, the [Energy Performance of Buildings Directive](#) (EU/2024/1275)[EPBD] includes *seismic safety* and *risks related to intense seismic activity* in the context of major renovations, training needs, information provisions and national building renovation plans (NBRPs).

Furthermore, the EPBD recast sets out multiple provisions and new policy instruments that offer an opportunity to approach renovations from a holistic perspective. By identifying the worst-performing buildings in seismic areas, Member States will be able to prioritise the renovation of buildings with structural issues first. Through enhanced one-stop shop services and a solid renovation passport scheme in place, renovation advice can include structural reinforcement aspects and be more accessible and straightforward.

Opportunities for holistic renovation in the EPBD recast include:

- **Prioritising renovation of at-risk buildings with structural issues through classifying as ‘worst-performing’ buildings**
- **Using one-stop shops and renovation passports to provide integrated advice and support**

The multiple socio-economic benefits of building renovation are best achieved when local communities are actively engaged, and an inclusive approach can contribute to achieving this objective. An inclusive approach means an early and substantial involvement of residents in decision-making processes, including co-design activities. This process enables finding collectively place-based solutions to renovation, which fit the best local conditions of the neighbourhood, such as socio-economic conditions, building typology, microclimate, topography, local potential for renewable energy production and storage, etc.

Additionally, a participatory process can enable a holistic approach to renovation, which besides energy upgrades, tackles other aspects, such as accessibility for persons with disabilities, or seismic safety to achieve healthy, resilient buildings which contribute to decarbonisation policy goals. Within the [e-SAFE project](#), a meaningful engagement of the residents and local actors from the three pilots in Catania (Italy), Timisoara and Bucharest (Romania), provided significant insights and meaningful lessons for the replication of the model.

However, regulatory and financial barriers hinder a holistic approach to renovations based on co-design. Separate streams of finance for urban regeneration, seismic safety and energy efficient renovation can hinder a holistic service offering from within one-stop shops, as well as different competencies needed for a building screening and building certification. A co-design process requires longer design and implementation periods, as well as competencies in social sciences and stakeholder engagement within municipalities, NGOs or construction companies.

¹ <https://publications.jrc.ec.europa.eu/repository/handle/JRC132940>

² [Energy Performance of Buildings Directive](#) (EU/2024/1275)

The additional benefits of co-design within renovation should be acknowledged by sustainable finance, which considers environmental, social and governance (ESG) aspects for investment decisions, enabling cheaper finance for socially sustainable projects. Holistic, user-centred and community-driven renovations will enable a sustainable pace and depth of renovation needed to achieve the climate and decarbonisation targets in the building sector.

EXISTING POLICIES

Even though there are no specific or direct references in the European building policies toward integrated approaches in renovation, there have been several initiatives at the EU level that can provide a good basis for Member States to develop and integrate into their national and local renovation policies, programmes and financing schemes aspects that go beyond energy performance.

The [Fit for 55 package](#) sets out to achieve the EU's target of a 55% reduction in greenhouse gas (GHG) emissions by 2030. The package spans a long list of directives that had to be revised to bring the EU in line with the new emissions reduction ambitions set for 2030, including the [Energy Performance of Buildings Directive](#) (EU/2024/1275) recast in 2024. Renovation has been identified as a key enabler of the EU's efforts to deliver on its energy and climate commitments. In 2020, the European Commission presented the [Renovation Wave](#) strategy along with an action plan, in a targeted effort to double energy renovation rates by 2030, all while reducing carbon emissions and expanding the green jobs market.

New European Bauhaus



The [New European Bauhaus](#) is an interdisciplinary initiative within the [European Green Deal](#), aiming to bring together different stakeholders, such as architects, artists, students, engineers and designers, to deliver solutions together. To address the challenges of climate change and environmental degradation, solutions to decarbonise the building stock should be co-created by considering the multifaceted aspects of the challenges and by involving as many relevant stakeholders as possible.

The New European Bauhaus highlights the role of social sciences, humanities and arts in finding solutions, which include, besides functionality and energy performance, circularity, aesthetics, affordability, accessibility and inclusion among others. These

solutions are place-based and should be co-created with the residents to achieve a human-centred design approach.

*It is an invitation to address complex societal problems together through **co-creation** [...] By creating bridges between different backgrounds, cutting across disciplines and building on participation at all levels, the New European Bauhaus inspires a movement to facilitate and steer the transformation of our societies along three inseparable values:*

- *sustainability, from climate goals to circularity, zero pollution, and biodiversity*
- *aesthetics, quality of experience and style beyond functionality*
- ***inclusion**, from valuing diversity to securing **accessibility and affordability***

[New European Bauhaus](#)

Energy Performance of Buildings Directive

The 2024 recast of the [Energy Performance of Buildings Directive](#) (EU/2024/1275) does not explicitly mention a holistic approach in regard to deep renovation. However, the implementation of various provisions offers the opportunity to integrate other aspects besides energy performance.

For the first time, the recast EPBD mentions the necessity of addressing risks related to intense seismic activity within major renovations. The directive highlights the need to take into account many other aspects of major renovations besides energy performance, such as seismic and fire safety, accessibility for persons with disabilities, the removal of hazardous substances including asbestos, indoor environmental quality, adaptation to climate change, etc.

*3. Member States shall, in relation to buildings undergoing major renovation, encourage high-efficiency alternative systems, in so far as technically, functionally and economically feasible. Member States shall address, in relation to buildings undergoing major renovation, the issues of indoor environmental quality, adaptation to climate change, fire safety, **risks related to intense seismic activity**, the removal of hazardous substances including asbestos and accessibility for persons with disabilities.*

Article 8 **Existing buildings**,
[Energy Performance of Buildings Directive](#)
(EU/2024/1275)

*Member States shall ensure that guidance and training, including for under-represented groups, are made available, for those responsible for implementing this Directive [...] Such guidance and training may **also address structural improvements**, adaptation to climate change, fire safety, **risks related to intense seismic activity**, the removal of hazardous substances including asbestos, air pollutant emissions (including fine particulate matter), indoor environmental quality and accessibility for persons with disabilities.*

Article 29 **Information**,
[Energy Performance of Buildings Directive](#)
(EU/2024/1275)

An integrated approach for major renovations (which includes aspects of seismic safety) is also covered in provisions on training in the construction sector, as well as provisions regarding information, such as renovation passports. Disclosure regarding the seismic safety of a building, if available, is listed as an optional indicator within renovation passports in ANNEX VIII.

***The renovation passport may include:** (f) information related to seismic safety, where such information relevant to the building is made available to the expert;*

ANNEX VIII Requirements for renovation passports,
[Energy Performance of Buildings Directive](#)
(EU/2024/1275)

Member States will have to report on progress regarding renovation policies within NBRPs. One of the optional indicators refers to resilience against seismic risk:

***Optional indicators:** (d) the increase in resilience against disaster risks, including risks related to intense seismic activity*

ANNEX II Template for the national building renovation plans (referred to in Article 3),
[Energy Performance of Buildings Directive](#)
(EU/2024/1275)

SEISMIC RENOVATION AS PART OF A HOLISTIC AND HUMAN-CENTRED APPROACH

Approaches and techniques for community engagement

Stakeholder engagement is crucial in the construction and renovation sector for testing, adjusting, and validating the technology and method used, as well as for generating interest and social acceptability while expanding market implementation. Energy efficiency and renewable energy projects may use a variety of methods and techniques for each stage of stakeholder engagement, involving three main activities:

- **Stakeholder identification:** identify stakeholders and determine their concerns and influence. Stakeholder Circle, Social Network Analysis and Stakeholder Mapping are among the main techniques. These employ tools like *workshops, focus groups, and stakeholder diagrams* (Stakeholder Circle), *snowball sampling*³, *interviews, and questionnaires* (Social Network Analysis) and *power-interest grids* (Stakeholder Mapping).
- **Analysis of stakeholder interests and setting objectives:** methodologies such as *Q-methodology*⁴, *storytelling*⁵, and *modular participatory backcasting*⁶ can be useful for co-creating objectives. *Focus groups* are widely used with various *moderation techniques*.
- **Engagement process design and implementation with residents:** co-design can include virtual reality (*VR*) *tools* – whereby virtual reality allows tenants to envisage the renovation process, and using tools like BIM models allows *co-creative design*.

These methods ensure comprehensive stakeholder involvement and help align renovation processes with community needs and preferences. The e-SAFE project deployed some of them at the urban level and at the building level with high school students and teachers in the Timisoara pilot (Romania) and in a social housing project in Catania (Italy). We will illustrate in more detail the engagement activities of Catania pilot as a replication model⁷ for local authorities to meaningfully engage communities in the renovation of social housing.

Co-designing with social housing residents in e-SAFE's Catania pilot

The e-SAFE project stakeholder engagement strategy operates at two levels:

- building scale — co-design activities with residents of the three pilot buildings
- urban scale — engagement with local stakeholders at the city level where pilots are located (Catania, Bucharest and Timisoara)

³ Snowball sampling implies that the first identified stakeholders help identify the following ones.

⁴ Q-methodology involves interviews, ranking statements/images, and factor analysis.

⁵ Storytelling uses techniques like story-spine technique, discourse analysis, concordant analysis and story genres.

⁶ Participatory backcasting workshops apply descriptive statistics, causal-loop diagrams, brainstorming, modelling, project management techniques and interviews.

⁷ These insights are summarised in the protocol and roadmap for stakeholder engagement developed throughout the project. A final version of the e-SAFE co-design protocol will be public in November 2024.

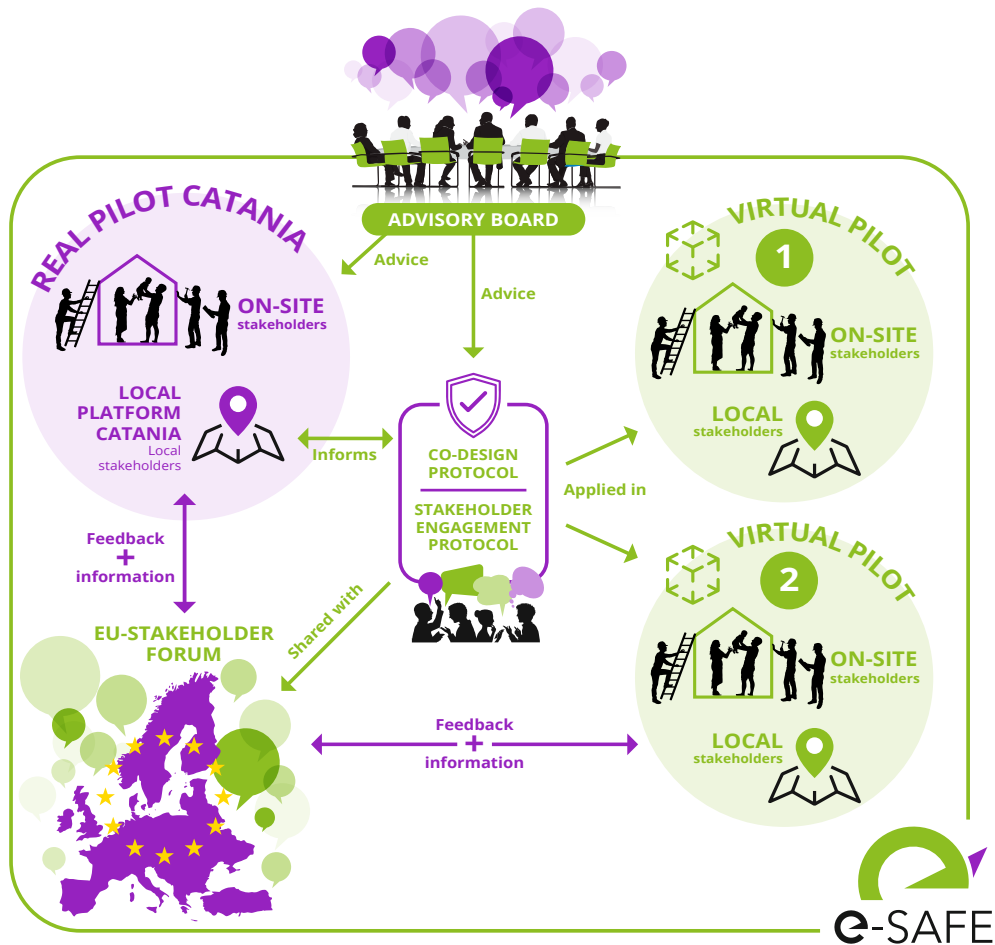


Figure 1: EU, local and building levels of stakeholder engagement

The two key principles for a successful community engagement are **(i)** early involvement in the project and **(ii)** ongoing engagement of the residents, especially at decision-making stages. In the e-SAFE case, the first step was to establish a **local platform** with stakeholders from the public, private, NGO and academic sectors to enable this renovation project and also the scale up of other holistic renovations in the future. Local platforms are groups of local stakeholders who will both support deep renovation at the building scale and also contribute to raising awareness of decarbonisation and seismic preparedness at the urban scale. This approach facilitates the dissemination of e-SAFE through place-based strategies and initiatives that seek to identify technical and economic renovation solutions appropriate to the local socio-economic context, building typology, etc. Local platforms are then committed to achieving the highest replicability of deep renovation interventions via multi-objective strategies able to deal with the complexity of the urban scale.

The Catania Local Platform brought together local authorities, businesses, and organisations to address energy and seismic renovation challenges. The Catania Local Platform adopted a co-production approach, involving stakeholders in the development of a geo-dataset for identifying potential renovation sites. The Catania Local Platform prioritised public residential buildings owned by the social housing association IACP Catania, addressing energy efficiency and seismic resilience in Catania’s fragmented housing market. The analysis classified buildings based on public ownership, identifying 253 buildings (30% of the stock) suitable for e-SAFE retrofitting. A more refined analysis highlighted 58 priority buildings (7% public housing) with favourable ownership conditions for intervention.

From July 2020 to December 2022, a co-design process took place in Catania to retrofit a pilot project

building, involving residents, experts, and stakeholders. Led by the University of Catania (UniCT), this effort included building owners, local public housing representatives, unions, and design professionals.

Co-design in Catania: key activities

- 1. Initial engagement meeting:** An informal courtyard meeting set the foundation for collaboration, with outreach via flyers and door-to-door.
- 2. Co-analysis:** Phone interviews and workshops gathered data on residents' homes and needs, facilitating a shared understanding of design preferences.
- 3. Co-design:** Four meetings with social housing residents focused on detailed design aspects like facade aesthetics and common areas, encouraging collective decision-making.

The collaboration resulted in a shared set of design preferences informing the final renovation plan. The process, while fostering stakeholder collaboration, faced challenges related to participant fatigue and bureaucratic deadlines, as well as tensions between stakeholders, which were addressed through regular meetings.

This project highlights the importance of extended collaboration and the need for streamlined processes to prevent burnout and ensure sustainability. The Catania Local Platform's collaborative approach emphasized the importance of stakeholder involvement and data-driven decision-making to facilitate deep renovations in public housing.

Barriers to integrated approaches in renovation and community engagement

The co-design approach within renovations brings multiple benefits. Benefits include the opportunity to adjust the technological, social and business model solutions to the local context and the community's needs, to engage the local community, and to facilitate decision-making within housing associations. However, an early and meaningful participatory approach makes the design and implementation process slower and more costly. It also requires capacity-building in terms of social sciences and humanities-related knowledge for the stakeholders leading the co-design approach. Local authorities and construction companies often lack these types of capacities.

An holistic approach to integrating energy upgrades with seismic safety renovations also includes similar barriers to implementation:

- National, regional and local authorities have separate public authorities/agencies that deal with energy performance and seismic safety and these tend to work in silos
- Separate policies and funding streams
- Energy performance certificates and seismic labels implemented in seismic-prone countries such as Italy and Romania are provided by different certifying bodies
- Different expertise needed for structural analysis and energy advice, not available within one-stop shops
- High costs of seismic certifications and structural analysis.

EPBD POLICY IMPLICATIONS

The ongoing EPBD implementation process offers the opportunity to scale up renovations in a holistic manner, addressing both energy performance and seismic safety. To get citizens involved in the energy transition, communities must be engaged in the renovation process and involved in decision-making from the start. In this sense, while designing the set of policies, finance mechanisms, training programmes and other enabling conditions necessary for an effective implementation of the EPBD, public authorities should also consider aspects regarding seismic safety as well as ways of making this process more inclusive.

Integrated advice within one-stop shops

According to EPBD Article 18 on *One-stop shops for the energy performance of buildings*, public authorities should set up **one-stop shops** per 80 000 inhabitants or in areas where Member States intend to implement **integrated district renovation programmes**. The aim of a one-stop shop is to provide an integrated service, offering holistic support to households through information and advice on technical and financial possibilities, including assistance in finding accredited companies and installers providing retrofit services.

The renovation guidance provided by the one-stop shops, including using renovation passports, should also contain an assessment of the building's structure and integrated technological solutions to address both energy efficiency and structural safety issues. Examples of such technologies are [e-PANEL and e-CLT](#) designed and demonstrated within the **e-SAFE project**, which are prefabricated elements to increase thermal insulation, increase the seismic resistance of the building and renew its architectural image.

Besides information and guidance on technological solutions, one-stop shops should offer integrated advice addressing both energy performance requirements and seismic safety aspects. Member States located within seismic-prone regions, such as Italy and Romania, have a seismic certification scheme for buildings under which a qualified technician evaluates the level of seismic risk to a given building. The information from the seismic certificate should be integrated into the digital building logbook and used in the staged renovation advice of the renovation passport. However, this integrated renovation roadmap will require inputs from experts in both energy performance and structural safety of buildings. Article 29 of the EPBD recast mentions the need for Member States to ensure guidance and training, also addressing aspects of structural improvements and risks related to intense seismic activity.

Implementation of national trajectories and minimum energy performance standards

Article 9 of the 2024 EPBD recast introduces the minimum energy performance standards (MEPS) for non-residential buildings and national trajectories for the progressive renovation of the residential building stock.

MEPS aim to trigger the renovation of existing buildings on a large scale, leading to a gradual phasing out of the worst-performing buildings, contributing to achieving the long-term goal of a decarbonised building stock by 2050. Member States should put in place policies and programmes that would help existing non-residential buildings meet a **specific energy performance threshold** *"at a trigger point such as sale, rent, donation or change of purpose within the cadastre or land registry, in a period of time or by a specific date"*.

The minimum energy performance standards shall ensure, at least, that all non-residential buildings are below:

- (a) the 16 % threshold from 2030;*
- (b) the 26 % threshold from 2033.*

Compliance of individual non-residential buildings with the thresholds shall be checked on the basis of energy performance certificates or, where appropriate, other available means.

Article 9, [Energy Performance of Buildings Directive](#)
(EU/2024/1275)

For **residential buildings**, Member States should put in place **national trajectories for their progressive renovation** to decrease the average primary energy use of the entire residential building stock over the period between 2020 to 2050. Furthermore, Member States shall identify the number of residential buildings to be renovated, including the floor area of 43% of the worst-performing residential buildings.

*Member States shall ensure that the average primary energy use in kWh/(m².y) of the entire **residential building stock**:*

- (a) decreases by at least 16 % compared to 2020 by 2030;*
- (b) decreases by at least 20-22 % compared to 2020 by 2035;*
- (c) by 2040, and every 5 years thereafter, is equivalent to, or lower than the nationally determined value derived from a progressive decrease in the average primary energy use from 2030 to 2050, in line with the transformation of the residential building stock into a zero-emission building stock.*

Article 9, [Energy Performance of Buildings Directive](#)
(EU/2024/1275)

The EPBD mentions the inclusion of the renovation of non-residential buildings that have been seriously damaged by a natural disaster in the compliance towards MEPS reporting. A more sustainable approach would be to identify and renovate buildings with structural issues before such buildings are further damaged by seismic activities. There could be an overlap between worst-performing buildings in terms of energy performance and buildings with structural issues, **however, in areas subjected to medium and high seismic risks, the identification of buildings to be renovated through MEPS or national renovation trajectory implementation should prioritise the latter. To ensure seismic safety and resilience** for their building stock, Member States may even choose to promote the use of renovation passports from a **'structural safety-first'** approach, essentially using earthquake safety as a gateway to implementing energy savings, which may not be seen as high priority for building owners or occupants whose primary concern is seismic safety.

Integrated financing streams⁸

The implementation of MEPS and national renovation trajectories will require mobilising private finance, besides existing public funding. The various public financing streams for urban regeneration, energy upgrades, energy communities and seismic safety must be integrated into credit lines and subsidies easily available within one-stop shops for the local communities renovating their neighbourhoods.

Loans and subsidies must be designed in a way to encourage packages of measures. Currently, programmes such as [KfW in Germany](#) encourage only packages of energy upgrades, providing preferential interest rates and increasing the amount of the grant for increased ambition. However, these types of subsidies and financing schemes currently do not consider and cover structural reinforcements coupled with energy upgrades. The EPBD mentions seismic safety amongst other aspects of renovations, thus, the subsidies and green loans implemented by the Member States should encourage a holistic approach to renovations.

In view of enabling private finance for co-design within renovations, an important role can be played by environmental, social, and governance (ESG) finance. Participatory and co-design aspects of renovation projects are in line with the social and governance principles of sustainable finance. Currently, sustainable ratings systems for buildings (such as BREEAM and LEED) are being used for ESG compliance. These certifications include governance criteria and parameters which can be a driver for the co-design approach in renovations. For example, BREEAM communities rating includes 'governance' criteria with a 'consultation plan' parameter, which aims to 'improve the quality of stakeholder engagement, throughout the design, planning and construction process'⁹. However, commonly recognised methods for assessing social and governance aspects in real estate projects are needed for streamlining financing products such as green loans.

⁸ This paper is part of a series of policy briefs developed within the e-SAFE project. Another one providing an overview of various financing solutions for holistic deep renovations, addressing both energy performance and seismic safety issues, will be published in the coming weeks.

⁹ <https://breeam.com/standards/communities>

Conclusions

The 2024 EPBD recast offers various opportunities for Member States to develop an integrated approach that addresses both the energy performance and the seismic safety of buildings. This approach focuses on implementing policies and measures to support long-term deep renovation while avoiding short-term solutions that could hinder future progress. Furthermore, by bringing a participatory and inclusive dimension to the renovation process, by engaging the community, the multiple benefits of renovation will become more evident and thus boost social support for renovation.

Key recommendations for encouraging a holistic and participatory approach for renovations:

- Community engagement should start from an early stage and involve relevant stakeholders in the decision-making throughout the design, planning and execution phases of the project.
- One-stop shops should include technical and financial advice for holistic renovations, addressing both energy and seismic safety issues.
- Member States should ensure that guidance and training are available on aspects such as structural improvements and risks related to intense seismic activity.
- In seismic-prone areas, renovation passports should incorporate information from the seismic certifications where available and include recommendations for improving structural safety within the renovation roadmap.
- In areas subjected to medium and high seismic risks, the identification of buildings to be renovated through MEPS or national renovation trajectory implementation should prioritize buildings with structural issues.
- Member States should provide targeted subsidies to cover the cost of seismic certification and renovation passports, especially for vulnerable households. Energy and structural surveys should be offered as integrated services within one-stop shops.
- Subsidies and green loans should be tailored to encourage packages of measures towards deep and holistic renovations.
- Commonly recognised methods for social and governance aspects of ESG compliance are needed to encourage cheaper finance for renovations which include co-design strategies.

The EU countries located in seismic-prone areas should integrate seismic and energy renovation policies and financing mechanisms, enabling a holistic approach to major renovations. The solutions developed within the **e-SAFE** project are both technically and socially innovative, enabling the scale-up of deep energy and seismic building renovation. By combining innovative technical solutions with implementation protocols, new business models and financial tools, engagement and training of a wide variety of actors, **e-SAFE** aims to transform the EU market of building renovation and to contribute to achieving the EU decarbonisation targets for 2030 and 2050.

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Authors	Victoria Taranu, BPIE Denisa Diaconu, BPIE
Reviewed by	Mariangiola Fabbri, BPIE Giuseppe Margani, UNICT Clare Taylor, Falconry Press Caroline Milne, BPIE
Graphic design	Penrose-CDB

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