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of the Regions**

**Commission for
the Environment,
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ENVE

Renovation wave and local and regional authorities: policy and tools to build capacity and finance projects



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List of abbreviations

BACS	Building automation and control systems
BSO	Building Stock Observatory
CEN	European Committee for Standardisation
CF	Cohesion Fund
CoR	European Committee of the Regions
EC	European Commission
EEA	European Environmental Agency
EED	Energy Efficiency Directive
EFSI	European Fund for Strategic Investments
EIB	European Investment Bank
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
ERDF	European Regional Development Fund
ESF	European Social Fund
ESIF	European Structural and Investment Funds
EU	European Union
GHG	Greenhouse gas
H2020	Horizon 2020
JRC	Joint Research Centre
LRA	Local and regional authorities
LTRS	Long-term Renovation Strategy
MFF	Multiannual Financial Framework
OP	Operational Programme
OSS	One-stop shop
PDA	Project Development Assistance
RED	Renewable Energy Directive
RWS	Renovation Wave Strategy
SCIS	Smart Cities Information System
SECAP	Sustainable Energy and Climate Action Plan
SFSB	Smart Finance for Smart Buildings
SME	Small and Medium-Sized Enterprise
TA	Technical Assistance
TBS	Technical building systems
TEN-E	Trans-European Networks for Energy
UIA	Urban Innovative Actions

Summary

Buildings are responsible for 40 % of final energy consumption and 36 % of all CO₂ emissions in the EU, and therefore present an enormous potential for contributing to climate neutrality objectives mainly through improvements to their energy efficiency and use of renewable energies for heating and cooling purposes. Given most of the EU building stock was built before 1970¹, renovation of these buildings is an opportunity to deliver energy savings and further integrate use of renewable energies in the building sector. Furthermore, the benefits of building renovations go beyond the immediate cost savings: they improve living conditions, tackle indoor air quality, create synergies in addressing wider social issues and stimulate local economies by creating jobs. As such, they present a very promising venue of action, especially in the aftermath of the COVID-19 crisis which pushes Europe to reconcile its transition to climate-neutrality with economic recovery.

However, deep renovation rates across the EU remain very low, failing to deliver on these strategic objectives. This is partly due to shortcomings of the existing policy and legislation in place as well as other instruments like financial technical support mechanisms. Acknowledging the need to act now to step up the efforts in this field, the European Commission published the Renovation Wave Strategy in October 2020. It is also an important component of the Green Deal and provides strategic direction for the future efforts for all government levels and different stakeholders.

Building renovations have an inherent local dimension, through rules and regulations, cultural aspects such as architecture, and their interactions with immediate social and economic realities of the local population. As such, local and regional authorities are at the forefront of designing and implementing renovation projects: they have the most profound and immediate knowledge about the local conditions, resources available and needs of their citizens. They are and will be playing a key role in achieving the objectives of the Renovation Wave.

This study aims to contribute to the on-going discussions by providing an overview of the legal and policy framework in place, existing EU initiatives that can be used by LRAs, barriers to a larger uptake of renovation at local and regional level, examples of good practice at Member State level which have the potential to support the policy work of the LRAs, a selection of case studies from individual projects that successfully tackled the barriers and an assessment of the Renovation Wave Strategy as to what extent it facilitates the efforts at different policy levels.

¹ European Commission, Building stock characteristics, available at: https://ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/building-stock-characteristics_en, accessed: 02.12.2020.

It concludes with recommendations which would help to overcome the barriers.

Financial barriers stem from two main issues: a serious investment gap and high initial costs associated with building renovations. From the LRAs perspective, this implies underfunding for renovation of public buildings. Furthermore, costs of designing, implementing and monitoring renovation projects also present an important barrier.

Technical barriers are mainly associated with lack of capacity among the LRAs to tackle the diverse components of policy design, implementation and monitoring of building renovation policies and initiatives. This covers a wide spectrum of actions from creating building stock inventory to develop and implement renovation projects of public buildings.

Barriers stemming from lack of awareness is related to lack of awareness concerning the benefits of renovation among the public officials, sector professionals and the public. For the LRAs, an additional barrier is the lack of awareness regarding the support mechanisms available to them whether it is financial or technical support.

These barriers reinforce each other, creating a vicious circle.

The five case studies focusing on initiatives from Picardie (France), Wallonia and Flanders (Belgium), Valladolid (Spain), Plock and Karczew (Poland) and Calarasi (Romania) underline the diversity of approaches that LRAs are using to tackle some of these barriers in their local contexts. Important aspects of successful projects include holistic approaches providing social and economic benefits, a strong engagement with local stakeholders, use of innovative approaches for financing the projects, clear communication with the wider public, effective use of data for designing and monitoring the projects, district level interventions, taking into account diverse building types and adapting the tools accordingly and finally, always having the intention to come up with solutions that can be upscaled and replicated.

The assessment of the Renovation Wave Strategy shows that overall, the RWS addresses a number of challenges faced by the LRAs proposing a variety of measures from which LRAs will directly benefit. These include possibility to combine different funding mechanisms, technical support and proposed changes to improve regulatory frameworks, such as revision of Energy Performance Certificates (EPCs) scheme and increased minimum energy requirements for new buildings. These have the potential to contribute to the on-going efforts of LRAs to boost the renovation wave.

Nevertheless, some shortcomings and thus scope for improvement were identified. These are mainly related to lack of more targeted funding and lack of more detailed approach when it comes to the revision of legislative frameworks. When it comes to targeted funding, RWS recognises the investment gap and supports more targeted funding but does not go beyond the existing structures of climate earmarking. Not providing a more specific funding stream for the renovation of buildings might lead to a persistent investment gap, which has direct implications for the LRAs. Regarding the legislative frameworks, the RWS underlines the importance of raising the level of ambition concerning some of the main aspects (such as EPCs mentioned above) but remains vague as to how the upcoming revisions would provide this.

Based on all the findings, the following recommendations are made:

In order to tackle the legislative and regulatory barriers, an enabling and coherent legislative framework should be put in place at all government levels from EU to local. This would mean **improving coherence** between renovation policies and diverse legislation related to competition, state aid, banking regulations and others that are focused on more technical issues, such as rules regarding building norms. This has the potential to allow less conventional methods for funding and provide flexibility in other aspects. Furthermore, **more ambitious policy** at EU, Member State and local level, coupled with **better implementation** can provide additional impetus. Suggestions include improvements to Energy Performance Certificates (EPCs) scheme, introducing minimum energy efficiency requirements and expanding renovation obligations to all public buildings. Member States and LRAs are encouraged to go beyond the EU level requirements and increase the ambition by designing renovation strategies with clear objectives and milestones. **Holistic approaches** that provide economic and social benefits are recommended, especially in the context of recovery from the economic impacts of the COVID-19 crisis. Life cycle approaches and interactions with other environmental policies including renewable energies and soft mobility should always be taken into account to avoid unintended consequences. **Empowering the LRAs through flexible mechanisms** is another recommendation: policies designed at EU and MS level should take into account the diversity of needs and strengths on the ground and allow for the adaptation of policies to a local context, aggregation of projects to better access finance and providing necessary support to LRAs to go beyond minimum requirements. Finally, an effective method for reconciling ambitious targets at EU and Member State level with flexibility is establishing **strong governance structures**. This would allow the perspectives of LRAs to be incorporated into the policies designed at EU and Member State level in a systematic manner.

In order to tackle the financial barriers, recommended measures include addressing the investment gap through **dedicated funding for renovation projects** which would be easily accessible by the LRAs, **encouraging private investment** by providing clear information and indicators on the benefits of renovation to increase their appeal, **aggregating projects** at district and neighbourhood level and beyond and encouraging the use of **innovative means to finance projects**.

In order to tackle technical barriers, support should be provided to LRAs by **mainstreaming assistance to wider EU structures**, in a similar way to ELENA Facility. National governments should support the LRAs in providing **regular training** to their staff in order to keep up to date with the latest developments regarding building renovations, support mechanisms and other aspects necessary for designing, implementing and monitoring renovation projects. When it comes to LRAs, they are encouraged to **harness the collective capacity of the local actors** such as researchers, private business, NGOs and citizens to improve their technical capacity base and expand their skills. They are also invited to participate in cross-country initiatives and share good practices with others in order to facilitate mutual learning.

In order to tackle barriers stemming from lack of awareness among citizens and local actors, LRAs can engage in **targeted communication campaigns** making use of trigger points and actors throughout the supply chain. They can also **lead by example**, using public buildings to showcase the benefits of renovations. Finally, LRAs should consider adopting **one-stop-shops as standard practice** to provide support to citizens and raise awareness, given their well-documented success in a variety of contexts.

Introduction

Background and the state of play

Buildings are central to the EU's energy efficiency policy as they account for nearly 40 % of final energy consumption and 36 % of all CO₂ emissions in the EU (mainly stemming from construction, usage, renovation and demolition). The construction and renovation of buildings require significant amounts of energy and mineral resources (e.g. sand, gravel, cement). Today, approximately 75% of the EU building stock is energy inefficient. This means that a large part of the energy used goes to waste. Such energy loss can be minimised by improving existing buildings and striving for smart solutions and energy efficient materials when constructing new houses². Currently the annual renovation rate of the building stock varies from 0.4 to 1.2 % in the Member States³. This rate will need to at least double to reach the EU's 2030 energy efficiency and climate objectives: renovating existing buildings could reduce the EU's total energy consumption by 5-6 % and lower carbon dioxide emissions by about 5 %. In parallel, 50 million consumers struggle to keep their homes adequately warm. To address the twin challenges of energy efficiency and affordability in the EU and the Member States, the renovation of public and private buildings is urgently required. While increasing the rate of renovation is a challenge, the potential rewards are significant as building renovations reduce energy bills, and therefore help to reduce energy poverty, improve indoor air quality and offer a higher comfort level for households⁴. Building renovation also contributes to increased productivity and competitiveness in firms, and to job creation, higher energy security for the public, and economic recovery in the context of the COVID-19 pandemic.

Boosting renovation in the EU: Renovation Wave

Important initiatives were put in place to encourage the renovation of buildings in recent years, including amending the Energy Efficiency Directive and the Energy Performance of Buildings Directive. These regulatory frameworks require the Member States to design and implement long-term renovation strategies. However, despite the positive impact of these initiatives, the renovation rate

² European Commission, In focus: Energy efficiency in buildings, available at: https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_en, accessed 02.12.2020.

³ Hermelik A., et al., 2019, Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU, IPSOS and Navigant Study for the European Commission DG Energy.

⁴ See section 2.1.4 in Communication from the Commission, The European Green Deal, COM(2019)640. See also: European Commission, Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU, November 2019, available at: https://ec.europa.eu/energy/sites/ener/files/documents/1.final_report.pdf.

across the Member States remains very low and will not be sufficient to reach climate neutrality targets⁵. To address this, the European Commission published a Roadmap for the Renovation Wave Strategy in October 2020⁶. The Renovation Wave is an important component of the European Green Deal⁷ and aims to boost renovation and address the challenges which inhibit the renovation process in the EU. As expected, the document recognises the very slow pace of deep renovations in the EU and proposes several measures to overcome the barriers, guided by the following principles: energy efficiency first, affordability of renovations, decarbonisation of energy sources, life-cycle approach, high health and environmental standards, addressing green and digital transition together and respecting architectural and aesthetic values of living spaces. One important aspect worth mentioning is the visible impact of the COVID-19 pandemic on the strategy. The economic and social impacts of the health crisis accentuate the importance of renovating the building stock, making it a promising venue where green transition, economic recovery and climate objectives can meet. The document emphasises this, pointing out synergies between the Renovation Wave and financial instruments (such as the Multiannual Financial Framework and the Next Generation EU) and climate and energy policies (such as the Climate Target Plan 2030)⁸.

In addition, the European Council of July 2020 decided on the budget for the Multiannual Financial Framework 2021-2027, weighing in at EUR 1,074.3 billion, and for the Next Generation EU 2021-2023, a new instrument endowed with resources of EUR 750 billion. As part of the latter, the Recovery and Resilience Facility will provide EUR 360 billion in grants and EUR 312.5 billion in loans. When allocated optimally, these funds can create an important opportunity for success for the Renovation Wave initiative. Building renovation is also central to the post-COVID 19 economic recovery, and was specifically referred to in the Recovery Plan⁹ published by the European Commission on 27 May 2020.

Way forward and the role of this study

The local and regional authorities (LRAs) are at the heart of the efforts to substantially increase the renovation rate across the Member States and are one of the most important actors when it comes to the implementation of policies

⁵ Hermelik A., et al., 2019, Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU, IPSOS and Navigant Study for the European Commission DG Energy.

⁶ European Commission, 2020, A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives, SWD (2020) 550 final.

⁷ European Commission, 2019, The European Green Deal, COM(2019) 640 final.

⁸ European Commission, 2020, A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives, SWD (2020) 550 final.

⁹ European Commission, 2020, Europe's moment: Repair and Prepare for the Next Generation, COM(2020)456.

regarding the renovation of the building stock in their constituencies. Therefore, the main objective of this study is to identify the challenges and needs of LRAs related to renovation, and how the upcoming Renovation Wave can respond to these needs. More specifically, the study aims to provide insights into the tools and priorities to ensure the Renovation Wave becomes a success from a local and regional perspective. The findings of the study will feed into an opinion dedicated to the Renovation Wave entitled “Renovation Wave in the buildings sector and opportunities for green European recovery” as well as into the work of the Green Deal Going Local Working Group.

Approach

This study is based on a literature review of various publications and existing information sources, including academic and grey literature (a complete list is available at the end of the report), a review of the available (in English) Member States’ long term renovation strategies (as established under the Energy Performance of Buildings Directive), and various sources of good practices¹⁰ in the area of building renovations to identify case studies, publicly available input from LRAs to the public consultation on the Renovation Wave Strategy carried out by the European Commission and a survey carried out for this study .

The main purpose of the survey was to gather LRAs’ and other relevant stakeholders’ opinions on the renovation needs and challenges they face. The questionnaire, translated in all EU languages and shared via EU Survey, was disseminated by the CoR ENVE Secretariat and through Milieu’s social media networks and was open for completion in October-November 2020.

The report is structured as follows:

- Section 1 provides an overview of the current relevant EU-level legal and policy framework as well as of EU-level initiatives supporting renovation at local/regional level
- Section 2 focuses on the main challenges to renovation, focusing on LRAs
- Section 3 highlights best practices as identified in the Member States’ LTRS
- Section 4 provides case studies looking into good practices by LRAs and a critical assessment of their strong points
- Section 5 assesses the extent to which the Renovation Wave Strategy initiative addresses the barriers identified in Section 2
- Section 6 provides a set of recommendations based on the findings.

¹⁰ See annex for more details.

1. Facilitating renovation through existing EU Instruments at local and regional level

1.1 Current legal and policy framework relevant for renovation at local and regional level

POLICY FRAMEWORK

The European Union (EU) aims to improve energy efficiency by 20 % by 2020, as highlighted in the Europe 2020 strategy¹¹, given this measure constitutes one of the most effective ways to improve security of energy supply while reducing greenhouse gas emissions. It is also beneficial for the European economy and would contribute to reaching the objectives of both the Roadmap to a Resource Efficient Europe¹² and the Low Carbon Roadmap 2050¹³. The former emphasises the improvement of buildings and sets 2020 as a milestone by when “the renovation and construction of buildings and infrastructure will be made to high resource efficiency levels. The Life-cycle approach will be widely applied”. The latter, together with the subsequent consultation of stakeholders through a 2030 Green Paper, made an important contribution, in October 2014, to the 2030 climate and energy framework, which further builds on the 2020 climate and energy package. It sets three key targets for the year 2030: at least a 32 % share of renewable energy, 40 % cuts in greenhouse gas emissions, and a 32.5 % improvement in energy efficiency (to be reviewed by 2020)¹⁴. This was further reflected on by the Commission in February 2015, through its Strategy for a European Energy Union¹⁵. The Energy Union strategy includes energy efficiency as one of its five main policy pillars. Furthermore, EU cohesion policy in the current programming period commits to investing EUR 29 billion in sustainable energy, including energy efficiency, renewable energy, smart energy infrastructure and low-carbon research and innovation, while the EU’s digital policy aims to contribute to energy efficiency at household level, for example, through support for smart metering and smart cities. In March 2019, the European

¹¹ European Commission, 2020, A European strategy for smart, sustainable and inclusive growth, COM(2010)2020.

¹² European Commission, 2011, Roadmap to a Resource Efficient Europe, COM(2011)0571.

¹³ European Commission, 2011, A Roadmap for moving to a competitive low carbon economy in 2050, COM(2011)112.

¹⁴ European Commission, 2030 climate & energy framework, available at: https://ec.europa.eu/clima/policies/strategies/2030_en, accessed: 02.12.2020.

¹⁵ European Commission, 2015, A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy, COM(2015)080.

Commission published the “Clean Energy for All Europeans” package¹⁶, completing a comprehensive update of eight legislative acts (including the Energy Efficiency Directive, the Energy Performance of Buildings Directive, the Renewable Energy Directive and the Governance Regulation) to facilitate the transition away from fossil fuels towards cleaner energy and reduced greenhouse gas emissions. The revised Energy Performance of Buildings Directive puts emphasis on tackling energy poverty and protecting vulnerable consumers.

The European Green Deal¹⁷ is a response to the challenge to make the EU’s economy sustainable. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. On 11 March 2020, the European Commission (EC) published its long-awaited new Circular Economy Action Plan¹⁸ (Action Plan), which constitutes one of the main building blocks of the European Green Deal. The Action Plan lists initiatives to establish a new product policy framework that will emphasise the use of sustainable products, services and business models. This product policy framework will be progressively rolled out, with key product value chains (e.g. electronics, textiles, plastics, packaging) addressed as a matter of priority. With the new Circular Economy Action Plan, the EC increases the pressure on industry and other stakeholders to transform their operations, services and products from a sustainability perspective.

The Renovation Wave, on the other hand, “will address current low decarbonisation and renovation rates of around 1 % across the EU and tackle the underlying barriers for improving the energy efficiency of the EU building stock”¹⁹. It will build upon measures agreed under the Clean Energy for all Europeans package, notably the requirements for Member States to publish long-term renovation strategies (LTRS) and other aspects of the amending EPBD, and building-related aspects of each Member State’s national energy and climate plan (NECP) as laid down in the Governance Regulation. It also provides an important entry point for reconciling climate neutrality objectives and the green growth in the aftermath of the economic crisis due to the COVID-19 pandemic. A more detailed assessment of the Renovation Wave is provided in section 1 of this report. Due to the substantial impact of the construction and building sector on resource

¹⁶ European Commission, Clean energy for all Europeans, available at: <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>, accessed: 02.12.2020.

¹⁷ European Commission, 2019, The European Green Deal, COM(2019)640.

¹⁸ European Commission, 2020, Circular Economy Action Plan for a cleaner and more competitive Europe, available at: https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf, accessed: 02.12.2020.

¹⁹ European Commission, Renovation Wave, available at: https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en, accessed 02.12.2020.

use, but also waste generation, the EC plans to launch a comprehensive Strategy for a Sustainable Built Environment (2021). The strategy aims to ensure policy coherence and will promote circularity throughout the lifecycle by, for instance, revising the Construction Products Regulation, possibly including recycled content requirements for certain products to ensure that the design of new and renovated buildings is in line with the needs of the circular economy. Additional focus areas will include increased digitalisation and climate – proofing of the buildings stock, developing digital logbooks (passports) for buildings, integrating life-cycle assessments in public procurement, and considering a revision of material recovery targets for construction and demolition waste and its material-specific fractions, in particular for insulation material which generates a growing waste stream.

LEGAL FRAMEWORK

The Energy Performance of Buildings Directive (EPBD) and the Energy Efficiency Directive (EED) are the main legislative instruments to promote the energy performance of buildings and to boost renovation within the EU, including at the regional and local level. In addition, the Renewable Energy Directive (RED), the Ecolabelling Directive, the Ecodesign Directive and the Governance Regulation have included some provisions which, in a more indirect way, can boost building renovation.

1.1.1 Directive on Energy performance of buildings (EPBD)²⁰

The EPBD has undergone a number of amendments since it was first adopted in 2009 and was amended in 2018. The latest changes to the EPBD include new elements to build a “resilient Energy Union and a forward-looking climate change policy”²¹ and set a clear direction towards the full decarbonisation of the European building stock by 2050. It provides a clear goal for Member States (i.e. to establish a long-term renovation strategy) and the tools to achieve it (i.e. the creation of a road map with milestones in 2030, 2040 and 2050). Apart from other provisions that can be indirectly relevant for the LRAs, the following are, or can be, directed towards local and regional authorities²²:

Article 2a: Long-term renovation strategy (LTRS): Member States must lay down plans to transform the building stock in the EU to reach nearly zero-energy performance levels by 2050. The provision includes a list of elements that should

²⁰ Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency.

²¹ European Commission, Energy Performance of Buildings Directive, available at: <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-performance-of-buildings/energy-performance-buildings-directive>, accessed 02.12.2020.

²² BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

be included in the strategy, including measurable progress indicators, the possibility of using trigger points in the life of the building and building renovation passports, policies and actions to stimulate cost-effective deep renovation of buildings, to target the worst performing segments of the national building stock; national initiatives to promote smart technologies; and an evidence-based estimate of expected energy savings. LTRSs apply to the national stock of public and private, residential and non-residential buildings. LRAs can participate in public consultations on LTRSs and contribute to policy recommendations; establish high quality data on the building stock; draft local/regional LTRS for their building stock; lead by example; and identify potential pilot projects.

Article 8: Technical building systems, electromobility and smart readiness indicator: The provisions relating to technical building systems (TBS) have been strengthened and expanded. New smart technologies have been taken into account, for instance, through requirements on the installation of building automation and control systems, the introduction of a mandatory requirement for individual room temperature control where technically and economically feasible and a mandatory assessment of energy performance of TBS at part-load. The amending provision also includes an optional common European scheme for rating the smart readiness of buildings. The smart readiness indicator will help raise awareness on smart technologies in buildings, including but not limited to smart meters, energy storage and the possibility to incorporate demand response measures. LRAs promote and support the common EU optimal scheme for rating the smart readiness of a building.

Article 20: Information: Member States need to take measures to inform tenants and owners on methods and practices to enhance the energy performance of buildings (e.g. energy performance certificates, available financial instruments). In addition, they must provide information through accessible and transparent advisory tools such as renovation advice and one-stop-shops. LRAs can get technical assistance in support of their building renovation projects and provide advisory services to citizens (one-stop-shops and information campaigns). EPBD will undergo a review in 2021 as a part of Fit for 55 Package proposed by the European Commission²³.

²³ European Commission, 2020, Commission Work Programme 2021 Annex I: New Policy Objectives.

1.1.2 The Energy Efficiency Directive

The Energy Efficiency Directive (EED) was adopted in 2012 and amended in 2018. The ultimate objective of the Directive is to deliver the EU's 20% energy savings' target and to pave the way for further energy efficiency improvements beyond 2020. While none of the amendments of the amending EED has as its core purpose the speeding up building renovations, both the overall 2030 energy efficiency target and the annual energy savings' objective of the energy savings obligation will also be achieved through energy savings in the buildings sector.

From the perspective of LRAs, the following provisions are relevant²⁴:

Article 1: consider setting a local/regional 2030 target for energy efficiency, aiming hereby to influence the indicative national energy efficiency contributions.

Article 7a & 7b: Energy efficiency obligation schemes and alternative policy measures: Member States are required to establish and operate Energy Efficiency Obligation Schemes (EEOS) or Alternative Measures that achieve the same amount of energy savings. An EEOS requires obligated parties, generally energy utilities, to meet energy saving targets by delivering or procuring energy savings at the customer end of the energy system. The Alternative Measures, on the other hand, could take different forms, such as taxes, financial incentives, regulations, labelling, training, education and advice. They could include, for example, voluntary agreements where actors - industry or local authorities - commit to certain actions. LRAs will play a role in identifying the vulnerable households that should have priority in benefitting from the energy efficiency measures laid down in the energy savings obligation. EED will undergo a review in 2021 as a part of Fit for 55 Package proposed by the European Commission²⁵.

1.1.3 The Renewable Energy Directive (2009 and 2018)

Reduction of energy consumption through energy efficiency measures and renewable energy production are mutually supportive. In the buildings sector, the synergies between the two must be strengthened to speed up decarbonisation, particularly of heating and cooling. The Renewable Energy Directive (RED) 2009/28/EC²⁶ was originally established in 2009 to create a legal framework to support the development of renewable energy in Europe and was amended in 2018

²⁴ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

²⁵ European Commission, 2020, Commission Work Programme 2021 Annex I: New Policy Objectives.

²⁶ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, OJ L 140, 5.6.2009.

following the Clean Energy for all Europeans Package. The RED²⁷ focuses on achieving EU and national targets for the use of energy derived from renewable sources. Integrating renewable energy solutions in buildings (solar water heaters, heat pumps, renewables-based district heating and cooling, biomass boilers, etc.) are clearly noted as having a role in achieving the target of 32% renewable energy by 2030, but there is nothing specifically related to the energy efficient renovation of buildings. Nevertheless, several provisions of the RED can have a clear impact on buildings' renovation policy:

Article 15.3 states that Member States must ensure that competent authorities at national, regional and local level include measures facilitating the deployment of renewables when carrying out spatial planning and when building or renovating urban infrastructure and commercial or residential areas.

Article 23 stipulates that Member States should endeavour to increase the share of renewable energy in heating and cooling by an indicative 1.3 % per year between 2020 and 2030. This could have a positive effect on accelerating building renovations as increasing penetration of renewable energy sources through district heating or heat pumps requires very low energy buildings and a joint planning approach between supply side and demand side measures. Furthermore, they can also plan building renovations and deployment of renewable energy solutions in conjunction to maximise synergies.

Under **Article 3**, LRAs can consider setting a local/regional 2030 target for renewable energy, aiming to influence the national renewable energy contributions.

The Renewable Energy Directive will undergo review in 2021 as a part of the Fit for 55 Package proposed by the European Commission²⁸.

²⁷ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, OJ L 328, 21.12.2018.

²⁸ European Commission, 2020, Commission Work Programme 2021 Annex I: New Policy Objectives.

1.1.4 The Governance Regulation

The Regulation on the Governance of the Energy Union and Climate Action (EU) 2018/1999²⁹ is part of the Clean energy for all Europeans package. The Regulation emphasises the importance of meeting the EU's 2030 energy and climate targets and sets out how EU countries and the Commission should work together, and how individual countries should cooperate, to achieve the Energy Union's goals. It considers the fact that different countries can contribute to the Energy Union in different ways.

Under the Governance Regulation (EU) 2018/1999, Member States develop integrated national energy and climate plans (NECPs). The plans cover the five dimensions of the Energy Union based on a common template. Buildings' policy is a key component of the NECP, particularly of its energy efficiency dimension (Article 4b). LTRS are supposed to form an integral part of the NECP. The following is the most relevant for the LRAs:

Article 15 stipulates that each Member State must prepare its long-term strategy with a perspective of at least 30 years, with the aim of achieving the overall climate objectives. This long-term strategy is a society-wide national decarbonisation plan to guide national action in reducing emissions from all sectors for the long term. Member States must address in their strategies reductions in heating and cooling from the buildings sector (residential and tertiary).

Article 11 highlights the need to “establish a multilevel climate and energy dialogue pursuant to national rules, in which local authorities, civil society organisations, business community, investors and other relevant stakeholders and the general public are able to actively engage and discuss the different scenarios envisaged for energy and climate policies, including for the long term”.

These provisions have important implications for LRAs which can participate in public consultations on NECPs and long-term strategies under Article 4b and 15³⁰ and actively request to set up a multilevel climate and energy dialogue under Article 11³¹.

²⁹ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council, OJ L 328, 21.12.2018.

³⁰ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

³¹ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

1.2 Upcoming legislative and policy initiatives

The European Commission signalled major changes to some of the legal and policy frameworks mentioned above, which are relevant for the Renovation Wave. **European Climate Law**³², proposed in March 2020, seeks to consolidate the 2050 climate neutrality objective as a binding target into the European law. By setting a legally binding target for the Member States and Europe as a whole, Climate Law will provide an undisputed strategic direction for all levels of policy making across diverse sectors. The proposition stresses the importance of a fair transition for all groups in society in a cost-effective manner. It also lays the groundwork for a robust monitoring system which will provide the necessary feedback in order to adapt the policies to ensure the targets are met³³. The Climate Law foresees a regular assessment of European and national policy and legislation in order to ensure their coherence with the EU climate neutrality target³⁴.

To support these efforts, the European Commission proposed the **2030 Climate Plan** in September 2020³⁵. As an integral part of the Green Deal ambitions and climate neutrality objectives for 2050, the Climate Plan proposes to raise the reduction target of greenhouse gas emissions for 2030 from 40 % to 55 %³⁶. In order to set the accompanying frameworks in motion, the following will be revived in the near future:

- EU Emissions Trading Scheme Directive
- Effort Sharing Regulation
- Land Use, Land Use Change and Forestry Regulation
- CO₂ standards for cars and vans Regulation³⁷

³² European Commission, 2020, Proposal for a Regulation of The European Parliament and of The Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM (2020) 80 final.

³³ European Commission, 2020, Proposal for a Regulation of The European Parliament and of The Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM(2020) 80 final.

³⁴ European Commission, European Climate Law, available at: https://ec.europa.eu/clima/policies/eu-climate-action/law_en, accessed 02.12.2020.

³⁵ European Commission, 2030 Climate Target Plan, available at: https://ec.europa.eu/clima/policies/eu-climate-action/2030_ctp_en, accessed: 15.11.2020.

³⁶ Ibid.

³⁷ Ibid.

The European Commission proposed the inclusion of the increased 55 % target into the Climate Law. The Climate Law is in the process of being negotiated as a part of ordinary legislative procedure. In late October, the European Council reached a partial agreement on the Climate Law, without reaching a conclusion on the intermediary targets proposed for 2030³⁸.

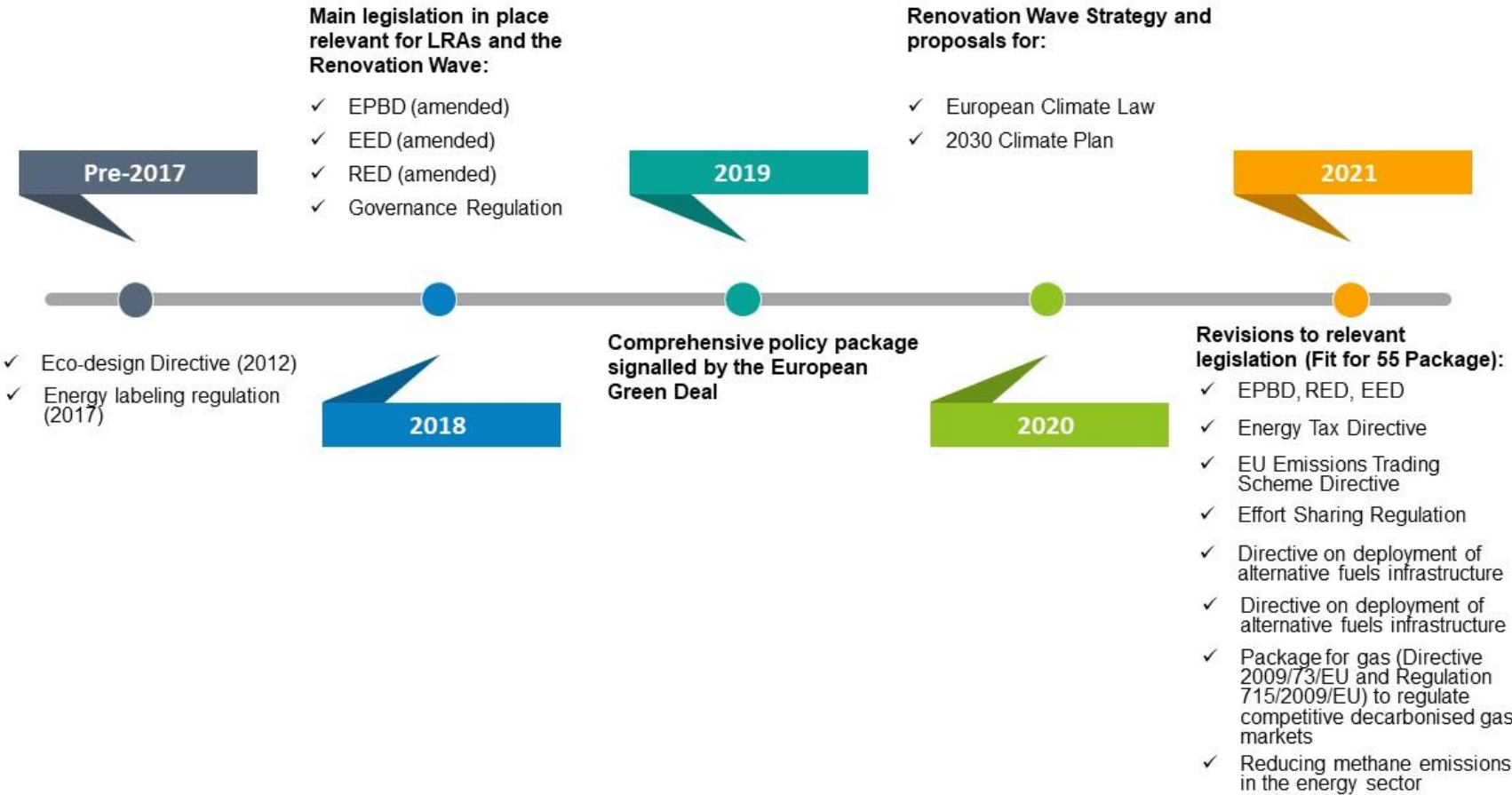
Finally, the European Commission published its 2021 work plan in October 2020³⁹. Under the pillar Green Deal and in addition to the legislative frameworks mentioned above, the following is also foreseen for possible revisions which will have direct and indirect implications for the Renovation Wave:

- Amendment to the Renewable Energy Directive to implement the ambition of the new 2030 climate target
- Amendment of the Energy Efficiency Directive to implement the ambition of the new 2030 climate target
- Reducing methane emissions in the energy sector
- Revision of the Energy Tax Directive
- Revision of the energy performance of Buildings Directive
- Revision of the Third Energy Package for gas (Directive 2009/73/EU and Regulation 715/2009/EU) to regulate competitive decarbonised gas markets
- Revision of the Directive on deployment of alternative fuels infrastructure

³⁸ The European Council, 2020, Press Release, European climate law: Council reaches agreement on large parts of the proposal, available at: <https://www.consilium.europa.eu/en/press/press-releases/2020/10/23/european-climate-law-council-reaches-agreement-on-large-parts-of-the-proposal/>, accessed: 15.11.2020.

³⁹ European Commission, 2020, Commission Work Programme 2021 Annex I: New Policy Objectives.

Figure 1: Policy and legislative frameworks relevant for Renovation Wave and upcoming initiatives, as of November 2020.



1.3 EU level initiatives supporting renovation at local/regional level

Supporting the legislative frameworks and policy initiatives described in the previous section, a multitude of EU-level tools and mechanisms can be used to accelerate the renovation rate at local and regional level. These mechanisms may or may not be derived directly from legislation, but they are indispensable tools to translate EU-level policy ambitions into action on the ground, providing important tools for the LRAs. This section provides an overview of these mechanisms, focusing on the ways in which they facilitate the interaction between the EU and local and regional levels, as well as different actors from financial institutions to private stakeholders.

The initiatives identified which are directly or indirectly related to the renovation of the building stock in the EU is roughly divided into three main categories: 1) **financial support** (e.g. grants, loans and other financing instruments), 2) **technical assistance** (such as guidance on and help with choosing and accessing funds, project implementation) and capacity building (training, social learning, decision making tools), and 3) **other types of support** which include advocacy, stakeholder engagement and communication. These categories are not mutually exclusive and there are often important overlaps between them, with initiatives combining more than one type of support.

1.3.1 Financial support

As seen in section 2.1.1, financial costs have been identified as one of the most important barriers to the widespread uptake of renovation. This can take many forms, from costs related to the renovation of public buildings to costs related to project development and access to EU funding. It is therefore of utmost importance for the LRAs to fully benefit from the existing financial support mechanisms. This can only be achieved with a clear understanding of the different types of financial support available and how these can be used to accommodate the specific needs of each LRA.

ESIF (European Structural and Investment Funds)

A number of overarching financial mechanisms can be used by the LRAs to boost the uptake of renovation in their localities. The most important among these are the European Structural and Investment Funds (ESIF), the European Regional Development Fund (ERDF) and the Cohesion Fund. These are directly relevant for renovation policies since they are one of the most important instruments to achieve the overarching goals of the European Union, namely smart, sustainable,

and inclusive growth. Several of the thematic objectives of the ESIF directly target energy efficiency in buildings as well as the use of clean energy in public and private infrastructures. In their operational programmes (OP), national and regional authorities can define priorities which directly target renovation and LRAs can be the beneficiaries of the financial support usually in partnership with other stakeholders.

There are many examples of successfully funded ESIF projects - for example, the REBUS project⁴⁰ is focusing on raising awareness and developing skills on energy-related issues and giving local authorities the knowledge needed to design an Energy Renovation Path (ERP) for public buildings. An ERDF project in Bulgaria⁴¹ focuses on renovating small family apartment blocks to improve their energy-efficiency ratings.

Urban Innovative Actions

Apart from funding individual projects, ESIF such as the ERDF also finance programmes and initiatives at EU level which, in turn, can provide support to projects at local level. One notable example is Urban Innovative Actions (UIA) which is financed under the ERDF. It provides support to develop and test innovative solutions to urban challenges throughout Europe. UIA is directly relevant for LRAs since it works with local authorities that want to implement innovative, untested ideas but are facing resource limitations. UIA can provide funding for up to 80 % of the project costs (up to EUR 5 million) but also acts as a knowledge hub between the LRAs, policy makers and other stakeholders by drawing lessons from previous projects and sharing the results⁴².

Horizon 2020

Horizon 2020⁴³ (H2020) is another funding tool which can be used to address the challenges related to renovation. Since the main focus of H2020 is research and innovation, it leads to long-term, systemic change through projects which can be replicated by other parties. Most of the H2020 projects result in knowledge and tools that can be used by the LRAs for policy design, implementation and monitoring. An important example is the Energy-efficient Buildings Public-

⁴⁰ European Commission, REBUS : Making Europe's public buildings more energy efficient (DE, IT, HU, PL, EL, UK, SE, RO), available at: https://ec.europa.eu/regional_policy/en/projects/Greece/rebus-making-europes-public-buildings-more-energy-efficient, accessed: 04.12.2020

⁴¹ Energy-saving measures for homes in Pazardzhik, Bulgaria, available at: https://ec.europa.eu/regional_policy/en/newsroom/news/2020/07/07-09-2020-energy-saving-measures-for-homes-in-pazardzhik-bulgaria, accessed: 15.10.2020.

⁴² Urban Innovative Actions website, available at: <https://www.uia-initiative.eu/en>, accessed: 15.10.2020.

⁴³ Horizon 2020 will become Horizon Europe in the post-2020 period.

Private Partnership that aims to create an innovative and competitive building industry in the EU⁴⁴. Furthermore, due to its inherent design, the H2020 programme encourages partnerships between local authorities and a wide range of stakeholders at project level⁴⁵.

ELENA Facility (EIB)

The European Investment Bank (EIB) provides a wide range of financial products which can be accessed by LRAs. The most important among these is the ELENA facility⁴⁶ which is comprised of different components targeting different sectors (energy efficiency, sustainable residences and urban transport and mobility). ELENA provides financial support to cover costs related to project development⁴⁷, as well as legal and other administrative aspects of projects. It also encourages partnerships between different entities to aggregate different projects to increase their appeal and feasibility. As such, it provides multiple advantages that go beyond financial support and it is also an important tool for technical assistance and capacity building (see below).

European Fund for Strategic Investments

The European Fund for Strategic Investments (EFSI) is a joint initiative between the EIB and the European Commission. Its main goal is to leverage private funding for projects with a higher risk profile but that have the potential to significantly contribute to the EU's key strategic goals⁴⁸. The main pillars of EFSI create synergies with the renovation of the building stock from different perspectives: while its 'resources efficiency' theme is of direct relevance to energy efficiency of buildings, its 'support for SMEs' theme is relevant for efforts to revitalise European local economies and creating jobs via supporting the renovation and construction industry.

⁴⁴ European Commission, 2013, The Energy-efficient Buildings PPP: research for low energy consumption buildings in the EU, available at: https://ec.europa.eu/research/press/2013/pdf/ppp/eeb_factsheet.pdf, accessed: 15.10.2020.

⁴⁵ For instance, the Innovate Project aims to provide a one-stop-shop for building renovations of residential buildings. The project is being piloted in 11 different cities across Europe, working with municipalities in Cyprus, Denmark, the Netherlands, Czechia and Italy and other stakeholders such as Energy Cities, universities (SE), agencies (Brussels and Riga).

⁴⁶ EIB, ELENA – European Local ENergy Assistance, available at: <https://www.eib.org/en/products/advising/elena/index.htm>, accessed: 15.10.2020.

⁴⁷ Boll J. N., et al., 2019, Financing Energy Renovation In Buildings: Guidance on financial schemes with a focus on Bulgaria and Romania.

⁴⁸ EIB, EFSI, European Fund for Strategic Investments, available at: <https://www.eib.org/en/efsi/what-is-efsi/index.htm>, accessed: 15.10.2020.

Smart Finance for Smart Buildings

Created and managed by the European Investment Bank, Smart Finance for Smart Buildings (SFSB) is a targeted financing instrument created in 2018. It aims to attract additional private funding by using public funding as a guarantee. Ultimately, it seeks to tackle the issues of energy efficiency and energy poverty while creating jobs in the renovation sector via supporting SMEs.

Apart from the EIB and European Commission funding instruments, there are a number of smaller EU initiatives providing a combined support offering technical, networking as well as funding support to LRAs as described below.

Climate KIC⁴⁹

Climate-KIC is a Knowledge and Innovation Community working to accelerate the transition to a zero-carbon, climate-resilient society. Cities were identified as the three major systems⁵⁰ which have the most potential in realising a climate-resilient society and net-zero carbon economy. One of the KIC's Focus areas is thus focusing solely on cities – KIC provides expert advice to cities and districts on how best to transform urban environments into decarbonised and climate-resilient urban areas.

European City facility⁵¹

The EUFC is a European initiative to support municipalities and local authorities to develop investment concepts to accelerate investments in sustainable energy. The initiative bridges two fundamental barriers for sustainable energy investments commonly associated with local level – the first one concerns the lack of financial and legal capacity of LRAs to transform their long-term energy and climate strategies into appropriate investment concepts. The second one is related to the lack of aggregation of fragmented smaller projects (for example in the building sector) and thus a lack of attractiveness for the financial sector. The EUFC offers LRAs a grant of EUR 60,000 to finance services and activities to support the development of the investment concept related to the implementation of actions identified in their climate and energy action plans⁵².

⁴⁹ EIT Climate-KIC website, available at: <https://www.climate-kic.org/>, accessed: 15.10.2020.

⁵⁰ alongside land use and manufacturing.

⁵¹ The European City Facility – EUFC website, available at: <https://www.eucityfacility.eu/investment-concepts/home.html>, accessed: 15.10.2020.

⁵² Finances can be provided to for example technical feasibility studies, market analysis, stakeholder analysis, legal, economic and financial analysis, risk analysis and the coordination and organisation activities.

1.3.2 Technical assistance and capacity building

A lack of technical capacity to design and implement policies to encourage renovation is another major challenge for the LRAs and can take many forms⁵³. In some cases, LRAs may lack awareness about financing mechanisms available to them or may face difficulties in the complex funding application procedures⁵⁴. In others, there might be a lack of knowledge about project management, conducting feasibility studies or other technical aspects⁵⁵ such as an overview of the existing building stock⁵⁶. These platforms are particularly useful for the LRAs which would like to receive general guidance on funding, which would be the entry point to understand financial opportunities available to them for boosting renovation efforts in their area.

Technical assistance for project development and access to funding

An important sub-group of technical assistance is offered by wider mechanisms of funding programmes, namely Technical Assistance (TA) Facilities⁵⁷ which also include targeted support such as Project Development Assistance (PDA). TA mechanisms usually come attached to wider programmes such as H2020 and ELENA, providing technical and financial assistance at the same time, making their classification more challenging. The difficulties related to navigating complex application procedures to access EU funds, designing projects and coordination of different partners is a significant, widely recognised challenge for the LRAs. TAs and PDAs are designed to respond to these challenges and they play an important role between the design pre-phase of projects and the implementation.

JASPERS⁵⁸

Another initiative targeting LRAs is JASPERS created by the EIB, helping to prepare better quality projects to access ESIF funds. The support scheme helps LRAs to build their capacity to better understand the entire project cycle, the context of EU legislation and the environmental issues they are trying to tackle. Due to its structure and way of functioning, JASPERS has the potential to create

⁵³ PUBLEnEF Project Policy Brief, 2018, Focus on Local And Regional Renovation Strategies

⁵⁴ Boll J. N., et al., 2019, Financing Energy Renovation in Buildings: Guidance on financial schemes with a focus on Bulgaria and Romania.

⁵⁵ Ibid.

⁵⁶ Interreg, 2018, Analysis of Current National and Regional/Local Renovation Strategies.

⁵⁷ Technical Assistance Facility and Project Development Assistance Facility may take different meaning depending on the context. Here, we refer to specific support structures which accompany the organisations that are involved in the planning and implementation of both funding programmes and projects that receive funding.

⁵⁸ JASPERS, Joint Assistance to Support Projects in European Regions website, available at:

<https://jaspers.eib.org/>, accessed: 15.10.2020.

lasting change within the organisations and is particularly important in cases where LRAs face challenges related to administrative capacity.

FI-compass⁵⁹

FI-compass is the information and guidance platform on ESIF instruments, providing a multitude of tools to the interested parties, from managing authorities to potential beneficiaries. Its main goal is to provide general information on different funds under ESIF, related legislation and technical guidance for the establishment and implementation of financial instruments.

URBIS⁶⁰

Urban Investment Advisory Support (URBIS) is a dedicated urban investment advisory platform within the European Investment Advisory Hub (EIAH)⁶¹ specially focusing on providing support to city authorities. The main objective is to help cities develop, finance and implement urban investment programmes. It offers cities more urban specific and place based advisory support, focusing both on city wide investment planning and the financing needs for projects. URBIS builds on several existing EU and EIB initiatives such as ELENA and One Stop Shop for Cities⁶².

BUILD UP⁶³

The Build Up is a European Portal for Energy Efficiency in Buildings. A dedicated website provides a comprehensive information on the energy building efficiency topic. A ‘Build-up skills initiative’⁶⁴ is included within this portal. The initiative has been working on training the number of building professionals across Europe who will subsequently deliver high-quality building renovations. LRAs can benefit from both the Portal website as it provides an abundance of information on the buildings’ renovation topics, as well as ‘Build-up skills initiative’. Although they are not targeted beneficiaries, many projects include wider stakeholder engagement which can include regional authorities.

⁵⁹ FI – compass website, available at: <https://www.fi-compass.eu/>, accessed: 15.10.2020.

⁶⁰ European Investment Advisory Hub (EIAH), URBIS website, available at: <https://eiah.eib.org/about/initiative-urbis.htm>, accessed: 15.10.2020.

⁶¹ European Investment Advisory Hub, available at: <https://eiah.eib.org/index>, accessed: 15.10.2020.

⁶² European Commission, Cities and Urban Development, available at: https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development_en, accessed: 15.10.2020.

⁶³ BUILD UP, The European Portal for Energy Efficiency in Buildings, available at: <https://www.buildup.eu/en>, accessed: 15.10.2020.

⁶⁴ BUILD UP, About BUILD UP Skills, available at: <https://www.buildup.eu/en/skills/about-build-skills>, accessed: 15.10.2020.

1.3.3 Other types of support available

Information and knowledge exchange

Lack of awareness of multiple benefits of building renovations was also identified as one of the barriers particularly relevant for LRAs. Moreover, once this barrier is tackled, lack of awareness regarding financial support mechanisms is another potential limitation in successfully taking up the renovation wave on the local and regional level. The following initiatives offer various networking and information exchange support available to LRAs. One of them, Covenant of Mayors, represents a unique initiative of this kind, offering not only information and best practice exchange, but it also steers policy development on the local and regional level targeting the climate change issue.

Covenant of Mayors⁶⁵

The EU Covenant of Mayors for Climate and Energy brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives and as such represents a unique bottom-up initiative specifically focusing on LRAs striving to tackle climate change in their cities and regions⁶⁶. LRAs commit to develop a Sustainable Energy and Climate Action Plan (SECAP) which outlines the key actions the LRA plans to undertake towards its 2020 or 2030 energy and climate targets. The website includes a ‘Good Practices’ database with case studies, city profiles and videos all on the topic of regional and local climate adaptation and mitigation strategies.

The Smart Cities Information System⁶⁷

SCIS (Smart Cities Information System) is a knowledge hub for cities, helping them to become cleaner, more energy efficient and sustainable. SCIS functions as a platform where information and knowledge can be exchanged via the dissemination of best practices and lessons learned from projects across Europe. It targets policy makers, project developers, experts, industry and researchers. The website features a projects’ database, a library of tools such as webinars and workshops and trainings.

⁶⁵ Covenant of Mayors for Climate and Energy Europe, available at: <https://www.eumayors.eu/en/>, accessed: 15.10.2020.

⁶⁶ The initiative now gathers over 9,000 local and regional authorities across 57 countries and has expanded significantly since its creation reaching LRAs beyond the EU Members States.

⁶⁷ Smart Cities Information System (SCIS) website, available at: <https://smartcities-infosystem.eu/> , accessed: 17.10.2020.

One-stop-shop for cities⁶⁸

Developed in 2016, the One-stop-shop for cities portal provides a single access point to numerous types of information sources relevant for cities. The website provides links to topics concerning city initiatives, knowledge for cities, funding for cities, city events and priority themes. As highlighted above, the myriad of information can be difficult to navigate through for the LRAs so this is another useful portal compiling all important web sources and links in one website.

EU Building Stock Observatory⁶⁹

Established in 2016 by the European Commission, the Building Stock Observatory (BSO) aims to provide comparable data on various aspects of energy performance of the building sector through a set of indicators. Since such information is often lacking, the BSO has the potential to greatly improve policy design, implementation, and monitoring by providing transparent and reliable data. However, currently the data is at EU and national level and does not provide more detailed information that is crucial for LRAs.

EU Energy Poverty Observatory⁷⁰

The EU Energy Poverty Observatory (EPOV) is a 40 - month project which started in December 2016. The main objective is to improve sharing of knowledge and best practices on energy poverty and to drive the creation of innovative policies and practices to deal with it.

The link to Catalogue of Practical policies and measures implemented in various Member States includes many examples of successfully implemented projects and it is easily searchable for local/regional initiatives on energy poverty. Many projects are in fact implemented by LRAs or LRAs are directly involved. In ACHIEVE⁷¹ for example, the project was carried out by the local government in Barcelona providing energy advice to low income households being at risk of disconnection and by doing so saving over 5,000 households from being cut-off⁷².

⁶⁸ European Commission, Cities and urban development website, available at: https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development_en , accessed: 17.10.2020.

⁶⁹ EU Building Stock Observatory (BSO) website, available at: https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/eu-bso_en?redir=1 , accessed: 17.10.2020.

⁷⁰ European Commission, EU Energy Poverty Observatory website, available at: <https://www.energy-poverty.eu/about/about-observatory> , accessed: 17.10.2020.

⁷¹ European Commission, Intelligent Energy Europe, Project database, Actions in low income Households to Improve energy efficiency through Visits and Energy diagnosis (ACHIEVE) website, available at: <https://ec.europa.eu/energy/intelligent/projects/en/projects/achieve> , accessed: 17.10.2020.

⁷² Energia Barcelona, Energy Advice Points, Detecting energy poverty, defending energy rights, available at: https://energia.barcelona/en/noticia/detecting-energy-poverty-defending-energy-rights_609622 , accessed: 17.10.2020.

European Energy Efficiency Platform (E3P)⁷³

Another tool to address the lack of comprehensive and coherent data on energy efficiency policies is a JRC made European Energy Efficiency Platform (E3P). E3P serves as an online tool to provide a one-stop platform for data collection and analysis and to facilitate knowledge exchange. The JRC also strives to ensure that data and information provided are consolidated and validated by peers.

It is directly relevant for LRAs as it tries to engage all experts and authorities, bringing together knowledge from different stakeholders including research, industry, policy, NGOs and supporting policy-makers at all levels, from local, to regional, national and EU level. The ultimate objective is to support the policy making process related to energy efficiency at all levels of governance.

Smart Cities Marketplace⁷⁴

The Smart Cities Marketplace is another information hub for European cities bringing together cities, industries, SMEs, investors, researchers and other smart city actors. It contains six Action Clusters⁷⁵ each working on specific issues related to smart cities, by sharing the knowledge and expertise with their peers, giving added-value to their national and local experience and identifying gaps that need to be fulfilled at European level.

Apart from helping LRAs to connect with each other within different action clusters, it also provides guides and toolkits section, advice on different EU funding available for smart cities, lists smart cities projects and initiatives and enables the sharing of information to enhance visibility of cities.

Urbact⁷⁶

The URBACT programme is the European Territorial Cooperation programme helping cities across Europe to develop sustainably. Similarly to the rest of the EU initiatives, special attention is paid to building and sharing knowledge to ensure that practitioners and decision-makers at all levels have access to knowledge and share know-how on all aspects of sustainable urban development.

⁷³ JRC, European Energy Efficiency Platform E3P website, available at:

<https://e3p.jrc.ec.europa.eu/about/european-energy-efficiency-platform> , accessed: 17.10.2020.

⁷⁴ Smart Cities Marketplace website, available at: <https://eu-smartcities.eu/> , accessed: 17.10.2020.

⁷⁵ <https://eu-smartcities.eu/clusters>

⁷⁶ URBACT website, available at: <https://urbact.eu/> , accessed: 17.10.2020.

*Interreg Europe*⁷⁷

Interreg Europe is an EU programme financed via ERDF with EUR 359 million allocated for 2014-2020. The primary target group is regional and local authorities whom the programme helps to develop and deliver better policy (Interreg offers funding opportunities up to 85 % of project's activities).

Many projects were successfully implemented over the last years always with an LRA relevance. For example, Spain, Regional Government of Andalusia carried out a project on gradual rehabilitation and energy retrofiting of its large public dwellings stock (ca. 45,000 social homes), aimed at increasing indoor comfort and air quality, energy saving and CO₂ emissions' reduction.

⁷⁷ Interreg Europe website, available at: <https://www.interregeurope.eu/>, accessed: 17.10.2020.

2. Main challenges to renovation at local and regional level

Based on a review of the sources mentioned in the introduction, a series of challenges that undermine the efforts of the LRAs to encourage a wider uptake of deep renovation, have been identified. These challenges are not homogeneous, nor are they isolated from each other. There are complex dependencies between them, sometimes reinforcing each other. Furthermore, they vary depending on the local context, although commonalities can be identified across different areas. An in-depth understanding of these challenges is essential for providing adequate and well-adapted policy solutions which can respond to the variety of the LRAs and their needs.

The section below provides an overview of these challenges accompanied by examples, where available.

2.1.1 Legislative and regulatory barriers

A myriad of regulatory and legislative instruments must come together and work coherently to achieve a successful large-scale uptake of renovation projects at local level. Furthermore, different government levels, from EU to local, need to coordinate their efforts and set up strong governance structures in order to facilitate policy work on the ground. Findings suggest that this is not always the case. From the perspective of LRAs, this leads to a context where they are expected to operate within a legislative and regulatory framework that is not always responsive to their needs. The main barriers that underline this context are explained below.

An important element is the failure to take into account the diversity of contexts on the ground when designing policies at EU and national level. This is closely related to a lack of systematic governance structures which take into account the perspectives of LRAs. For instance, in response to the consultation carried out by the European Commission for the recently published Renovation Wave, some LRAs stress that policy and regulatory instruments designed at EU level can lead to unintended outcomes if they fail to respond to the diversity of strengths and weaknesses of LRAs across Europe⁷⁸. The same applies to policies designed at national level. It is reported that national authorities are often not aware of the policies and measures implemented at local level, indicating a lack of

⁷⁸ Publicly available responses to the consultation on 'renovation wave' initiative were downloaded and analysed by Milieu.

consultation⁷⁹. As such, renovation strategies designed at national level may fail to respond to the needs at local and regional level.

Policy design and implementation at national level can create barriers for LRAs. Most pertinent among these are incomplete or unambitious transposition of EU level regulatory frameworks⁸⁰ and a lack of ambitious national renovation strategies. Unclear, unambitious and maladapted national strategies will create obstacles rather than supporting efforts, especially where competences of LRAs do not permit them to go beyond what is required by the national renovation strategies. For instance, in Ireland where energy retrofits are traditionally carried out for single houses, projects have to aggregate at least five housing units to benefit from funding schemes. This is considered to have resulted in the exclusion of highly-qualified professionals from the funding schemes and a monopolisation of retrofit market by a small number of companies⁸¹.

A lack of ambition at local level can also be a barrier. An important example of this is how the building performance standards are defined and how exigent they are⁸². For instance, if the minimum performance standards for buildings are not ambitious enough, projects can adopt more conventional methods that are better known to professionals, leading to suboptimal renovations⁸³. Given the long renovation cycle of buildings (estimated between 30 to 50 years)⁸⁴, this can create technological lock-in effects which do not incorporate state of the art technology.

Lack of common approaches (regarding definitions and methods) between the regions of the same country was another barrier identified. An EU funded project carried out in in nine EU countries (BG, ES, HR, GR, HU, IT, PT, RO, SI) and two non-EU countries (North Macedonia and UK) found that regions use different definitions, algorithms and procedures when establishing their renovation policies and calculating their impacts. These differences lead to important challenges for policy implementation and monitoring⁸⁵.

⁷⁹ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

⁸⁰ Magyar Z., et al., 2015, RePublic ZEB Project Deliverable D3.1: Report on the state of the art of the EPBD national implementation, describing policy mapping comprising the assessment of the existing national plans, policies and regulatory frameworks of target countries, existing barriers and best practices.

⁸¹ Grasset H., Scoditti E., Stunning Project, Deliverable 4.1, 2019, Energy Efficiency renovation market mechanisms, trends and barriers.

⁸² BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

⁸³ Interreg, 2019, Supporting energy renovation of private households through One-Stop-Shops.

⁸⁴ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

⁸⁵ Magyar Z., et al., 2015, RePublic ZEB Project Deliverable D3.1: Report on the state of the art of the EPBD national implementation, describing policy mapping comprising the assessment of the existing national plans, policies and regulatory frameworks of target countries, existing barriers and best practices.

The impacts of a considerably large variety of rules and regulations and their interplay with renovation projects is identified as another important barrier⁸⁶. These might stem from local, regional, national or EU level and may create compounding impacts for other types of challenges. Renovation projects of both private and public buildings require concertation and coordination of a multitude of actors, most of them functioning in a highly regulated environment. Furthermore, building renovations are directly and indirectly affected by urban planning rules, health and safety regulations, architectural and accessibility rules, banking regulations, inheritance laws, as well as housing regulations⁸⁷. Even the rules related to decision making processes in multi-unit apartment blocks were found to have an impact on renovation decisions⁸⁸. These processes and regulations are designed for other primary purposes, leading to competing or even contradictory requirements. For instance, permit procedures for renovation projects combine some of these elements and are frequently mentioned as an important barrier to the renovation of private buildings⁸⁹. This challenge can be exacerbated with exigent architectural norms that need to be followed for the renovation of historical buildings.

Another dimension concerning the renovation of public buildings is related to the rigidity of rules concerning public procurement, energy performance contracting, or other administrative aspects⁹⁰. These might fail to accommodate innovative approaches needed to select and finance renovation projects. A notable example is the Municipality of Velenje in Slovenia that used an innovative crowdfunding campaign to raise funds for the renovation of a university building. However, the current legislation prohibits an official entity (in this case, the municipality) to promise benefits or other financial returns to the investors (the crowdfunders) significantly reducing the appeal of the project. In this case, regulations in place actively undermine the use of such innovative ways on a wider scale⁹¹.

A similar issue is a lack of coherence between regulations related to competition, state aid and banking and how they interact at EU, national and local level. For instance, in Sweden, the interaction between the rules that govern the social housing estates and their profitability, European State Aid regime⁹² and

⁸⁶ EmBuild Project, Deliverable 4.2 (2017), Template for public sector renovation strategies

⁸⁷ BPIE, 2016, scaling up deep energy renovations unleashing the potential through innovation & industrialization

⁸⁸ Beillan V., et al. (no date), Barriers and drivers to energy-efficient renovation in the residential sector. Empirical findings from five European countries.

⁸⁹ The European Commission, 2019, Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU.

⁹⁰ Interreg, 2018, Analysis of Current National and Regional/Local Renovation Strategies

⁹¹ Bean F et al, 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

⁹² Braga M., Palvarini P., 2013, Social Housing in the EU, Report for the European Parliament, Directorate General for Internal Policies.

competition laws is reported to undermine potential renovation projects⁹³, limiting the area of action of the municipality⁹⁴. Another example is related to the setting of one-stop-shops: in such cases, public administrations must take into account laws regulating competition vis-a vis market operators, and what can be considered ‘free public service’⁹⁵ since what they are offering can come into competition with private actors. In another case, regional authorities in France have been working on financing schemes involving third party investors to unlock the potential of energy service contracting (ESCO) where homeowners pay back the costs of deep renovations (see below, Picardie Pass Renovation) to the company that undertook the works over a long period. However, regulations in place considered the pay-back scheme as a loan, therefore making the energy service companies subject to banking regulations. In 2015, the law for Energy Transition for Green Growth introduced an exemption for such companies under the banking licencing rules so that they can operate more flexibly, but still remain under scrutiny⁹⁶.

2.1.2 Financial barriers

In 2018, the High-Level Expert Group on Sustainable Finance estimated that additional annual investment of EUR 180 billion would be needed to achieve the 2030 energy efficiency targets for buildings across Europe⁹⁷. This represents the biggest investment gap among the sectors targeted by EU funds⁹⁸ and has significant impacts on the LRAs. The economic impacts of the COVID-19 pandemic that undermined the public budgets at local and regional level⁹⁹ are likely to aggravate this situation. The underfinancing results in limited uptake of deep renovation projects for both private and public buildings and restrains the LRAs in all their efforts related to the design, implementation and monitoring of renovation policies.

⁹³ In 2005, The European Commission challenged the universalist social housing model that was in place in Sweden on the basis that social housing should only target disadvantaged groups in society to avoid unfair competition for the property developers. As a result, the country removed the service of social housing from the list of Services of General Economic Interest (SGEI) under the State Aid rules. These changes are reported to have an impact on renovation projects of social housing.

⁹⁴ Input from LRAs to open public consultation on the Renovation Wave organised by the EC. These input were downloaded and analysed by Milieu.

⁹⁵ Innovate Project Report, 2018, Extensive analysis of the existing energy efficiency services operators and long-term financing schemes.

⁹⁶ Ibid.

⁹⁷ EU High-Level Expert Group on Sustainable Finance, 2018, Financing a Sustainable European Economy.

⁹⁸ European Commission, 2018, Smart Finance for Smart Buildings Facility, available at: https://ec.europa.eu/clima/sites/clima/files/docs/pages/initiative_7_smart_en.pdf, accessed: 02.12.2020.

⁹⁹ OECD, 2020, The territorial impact of COVID-19: Managing the crisis across levels of government.

A lack of investment is particularly important for renovation projects since they usually require high upfront costs. These increase substantially with the potential energy savings they bring in the longer term. Considering both residential and non-residential buildings, the BPIE study estimated renovation costs as EUR 60 per m² for minor renovations as opposed to EUR 580 for nZEB (nearly zero energy building) renovations¹⁰⁰.

Table 1: Renovation costs per m² and potential energy savings. Source: BPIE

Renovation type	Cost per m ²	Potential energy savings
Minor	€60	0%-30%
Moderate	€140	30%-60%
Extensive	€330	60%-90%
Almost ZEB	€580	Almost 100%

Without question, these costs present a major barrier for the deep renovation of public buildings. This was also emphasised by other studies: for instance, in a survey among different stakeholders, municipalities considered ‘insufficient budget’ a very important barrier, rating it as a higher challenge than other stakeholders¹⁰¹. Furthermore, these barriers can vary in magnitude, depending on the local context. For instance, a high rate of historical buildings might increase the costs of renovation significantly, or the local climate conditions may require better performing materials to attain the same level of energy savings. This has far-reaching impacts since the LRAs are expected to play a crucially important ‘pioneer’ role in stimulating change in the renovation sector by creating demand¹⁰².

In addition, costs associated with designing, implementing and monitoring policies (beyond the direct costs associated with renovation projects) can be significant. The scope of initiatives that can be taken at local level is wide, from setting up financing models to engaging in collaboration with researchers¹⁰³ or preparing databases about the building stock to provide technical training to officials or hire additional staff. These measures are often costly, especially if some of the processes have to be outsourced, in the absence of expert staff¹⁰⁴.

¹⁰⁰ Artola I, et al, 2016, Boosting Building Renovation: What potential and value for Europe?, Trinomics Study for the European Parliament ITRE Committee.

¹⁰¹ Grasset H., Scoditti E., 2019, Stunning Project, D4.1 EE renovation market mechanisms, trends and barriers.

¹⁰² Global Alliance for Buildings and Construction, International Energy Agency and the United Nations Environment Programme, 2019, Global status report for buildings and construction: Towards a zero-emission, efficient and resilient buildings and construction sector.

¹⁰³ JRC, 2019, From nearly-zero energy buildings to net-zero energy districts.

¹⁰⁴ Interreg, 2018, Analysis of Current National and Regional/Local Renovation Strategies.

Public funds at Member State and EU level and public-private partnerships can be used by the LRAs to cover these direct and indirect costs. However, accessing these mechanisms requires capacity and preparation which present additional costs in themselves, creating an additional barrier. This was one of the main findings of EMBuild project that supported 95 municipalities to prepare renovation strategies in BG, DE, HR SI and RO¹⁰⁵. In light of the economic impacts of the COVID-19 pandemic, additional burden on public budgets might have exacerbated the problem¹⁰⁶.

2.1.3 Technical barriers

Technical barriers present an important challenge for the LRAs, and they can take many forms, interacting with other barriers identified. They are related to all aspects of design, implementation and monitoring of the renovation policies, all of which require technical capacity.

One important barrier is the lack of technical capacity to create a robust knowledge base on the existing building conditions in the area. This is considered an essential step for designing, implementing and monitoring policy measures which will effectively respond to the specific needs identified¹⁰⁷. However, creating an inventory of the buildings and their performance is a demanding task, especially for the smaller municipalities¹⁰⁸. For instance, one comparative study conducted in France, Italy, Spain and Switzerland remarks that municipalities in general lacked knowledge about the technical characteristics of the buildings and renovation works taking place in the area¹⁰⁹.

Another barrier linked to technical capacity is related to the role that LRAs play in informing and advising citizens and other potential beneficiaries on deep renovation. As stated above, deep renovation requires the participation of a wide range of actors¹¹⁰, usually requiring technical knowledge which is in constant evolution¹¹¹. The inaccessibility of technical aspects, lack of certainty about concrete benefits of renovations and lack of trust towards construction

¹⁰⁵ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

¹⁰⁶ This point was mentioned also by the Association of Finnish Local and Regional Authorities, in response to the consultation organised by the European Commission

¹⁰⁷ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹⁰⁸ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

¹⁰⁹ Beillan V., et al., (no date), Barriers and drivers to energy-efficient renovation in the residential sector. Empirical findings from five European countries.

¹¹⁰ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹¹¹ Global Buildings performance Network, 2014, Reducing Energy Demand In Existing Buildings: Learning From Best Practice Renovation Policies.

professionals¹¹² often undermine the willingness of private building owners to undertake costly projects¹¹³. Furthermore, potential beneficiaries need support in identifying and understanding financial support schemes and the types of services available to them. These factors create a need for authorities to step in to provide support for and to build trust in renovation projects¹¹⁴. For instance, one-stop-shops (OSS) which support the entire process of renovation is an example of such a mechanism which can be driven by local administrations¹¹⁵. However, this requires the development of in-house expertise on the topic or creating dedicated units which is not readily available in most of the administrations.

A lack of knowledge about potential funds and how to access them is another barrier which is closely intertwined with the financial barriers explored above, creating a compounding effect¹¹⁶. This is part of a larger problem which affects LRAs in accessing funds in general. For instance, a similar observation was made about funds related to climate adaptation in previous studies¹¹⁷. In the context of renovation, lack of knowledge about available funds may present important barriers to identifying possible funding schemes, developing admissible application dossiers, putting in place a project management and monitoring structure. For instance, a study carried out in Southern European Member States found that a lack of ‘human infrastructure’ at the public administrations was one of the root causes of lack of uptake of nearly zero energy buildings (nZEB)¹¹⁸. Acknowledging this important barrier, support schemes like the ELENA Facility and Horizon 2020 also provide technical assistance to LRAs, ensuring they can benefit from the funds to the best possible extent.

¹¹² IPSOS, 2019, Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU.

¹¹³ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹¹⁴ Beillan V., et al., (no date), Barriers and drivers to energy-efficient renovation in the residential sector. Empirical findings from five European countries.

¹¹⁵ JRC, 2018, Case Studies: One-stop-shops for energy renovations of buildings.

¹¹⁶ EmBuild Project, 2018.

¹¹⁷ Gancheva M., et al., 2020, study for the Committee of the Regions, Adapting to climate change: Challenges and opportunities for the EU local and regional authorities.

¹¹⁸ Attia S., et al, 2017, Overview and future challenges of nearly zero energy buildings(nZEB) design in Southern Europe, Energy and Buildings 155 (2017) 439–458.

2.1.4Lack of awareness

Successful transformation of the renovation sector requires engagement from a wide range of stakeholders including the private sector, architects, civil society organisations, urban planners and private citizens as end-users. An important enabler for this engagement is the awareness of the potential benefits of deep renovations¹¹⁹. The same applies to public officials who need to take the decision to renovate public buildings and financial investors. However, the lack of awareness of these potential benefits and limited understanding of energy performance were identified as important barriers, both for public and private clients¹²⁰, and investors¹²¹. Consequently, difficulties associated with informing and educating relevant stakeholders about the potential benefits of deep renovation was identified as a particularly important challenge for the LRAs¹²².

A lack of awareness regarding financial support mechanisms available for the renovation of public and private buildings is another important factor. For the renovation of public buildings, this issue is explored in the previous section. For private buildings, contractors, architects or end-users may be convinced about the benefits of deep renovations, but unaware of the available mechanisms to cover the costs. Since financial barriers are significant, a lack of awareness about the possible solutions becomes a very important point to address. The diversity of the supply chain and the actors involved in renovation projects can be an asset since there are many potential triggering points where end users can be provided with relevant and useful information.

¹¹⁹ Beillan V., et al., (no date), Barriers and drivers to energy-efficient renovation in the residential sector. Empirical findings from five European countries.

¹²⁰ The European Commission, 2019, Final report – Technical study on the possible introduction of optional building renovation passports.

¹²¹ Interreg, 2018, Analysis Of Current National And Regional/Local Renovation Strategies.

¹²² Grasset H., Scoditti E., 2019, Stunning Project, D4.1 EE renovation market mechanisms, trends and barriers.

3. Member State level measures and good practices

This section highlights good practices in the field of building renovation in several Member States' regions and municipalities. All of the examples in the table below were identified in the Long-Term Renovation Strategies (LTRS) which Member States had to submit, by 10 March 2020, to the European Commission in the framework of the amending EPBD (Article 2a). So far¹²³, LTRS have been submitted by Austria, Belgium (Brussels and Flanders), Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Ireland, Latvia (not translated), Luxembourg, the Netherlands, Spain (not translated) and Sweden¹²⁴.

Good practices are categorised according to the barrier tackled and type of buildings concerned.

¹²³ Until 23.11.2020.

¹²⁴ Only LTRS translated into English were examined in this chapter.

Table 2: Examples of good practices from LTRS (Type of building: P: public, R: residential, NR: Non-residential)

MS and name of the program/initiative	Description of objective and scope	Type of barrier(s) addressed	Type
AT/The e5 scheme for municipalities ¹²⁵	<p>Provide participating municipalities with tools and support to set and achieve their energy and climate protection goals.</p> <p>Impact of e5 on building refurbishment:</p> <ul style="list-style-type: none"> • mobilisation of the municipalities as information hubs for members of the public, • training courses for employees of the municipalities (energy consultant training, etc.), • evaluation of the energy consumption of public buildings based on target and limit values • building-thermographic images, <p>initiation of the creation of refurbishment plans for public buildings, cooperation and communication with various target groups</p>	Information/awareness raising	P
BE(Flanders) /Local climate roundtables	<p>The starting point for this is existing local action. 269 Flemish cities and municipalities have already signed a Covenant of Mayors and committed in this way to local climate action. Climate roundtables culminate in projects in which various stakeholders are involved through a varied range of participation processes. For district renovation, these include the local authorities, the citizens and businesses involved in the district to be renovated, the local energy and housing service point, the financial sector and the local suppliers and installers of sustainable products. The input gathered through these local climate roundtables will also provide useful information for the participation process for the monitoring and implementation of the long-term renovation RWS for 2050.</p>	Information/awareness raising	All
SE/Green loans	<p>Kommuninvest is a credit institution owned by Swedish municipalities and regions, which offers financing solutions to municipalities and regions in the form of loans and advice.</p>	Financial	R and NR

¹²⁵ Concerns municipalities in Lower Austria

MS and name of the program/initiative	Description of objective and scope	Type of barrier(s) addressed	Type
	<p>Kommuninvest offers special ‘green loans’ which cover energy efficiency improvements in the building stock, amongst other things. Loans may be granted to projects in apartment buildings which will result in a reduction in energy consumption per square metre of at least 15 % and 20 % for apartment and non-commercial buildings respectively compared with what is determined by the Swedish National Board of Housing, Building and Planning’s building regulations. In addition, Kommuninvest can grant credit for major renovations to existing buildings, provided that the reduction in energy consumption is at least 30 % per square metre per year.</p>		
FR/Tax exemptions	<p>Local authorities may propose a partial or total exemption from land tax on developed property for owners of dwellings built before 1 January 1989 who make capital investments in the dwelling. Local authorities may also establish additional aid schemes to promote energy renovation by targeting the needs and priorities of their areas. The FAIRE network and the National Housing Information Agency ANIL produce a consolidated summary of the available aid schemes to make it easier for local households and tradespeople to become aware of them. The schemes generally target low- and very-low-income households or are designed to encourage renovations that will deliver a very high level of energy performance.</p>	Financial and awareness raising	R
CY/National RWS for the Development of the Mountain Communities	<p>The measures include the energy upgrading of private and public buildings, energy visits to households for their information and awareness, and pruning and green waste collection with a view to their energy recovery. The total indicative cost for the implementation of the proposed measures for the 2019–2030 period is estimated at €4,940,000. This initiative is the first structured energy design in a large geographical area, for Cyprus, which includes 115 communities.</p>	Financial/policy/information	R and P
NL/Transition Vision for Heating	<p>The Netherlands Heating Expertise Centre (ECW) supports municipalities with guidelines showing the social and economic costs of specific heating options per district. In addition, the Association of Dutch Municipalities (VNG) disseminates the experience gained from the Test Beds for Natural Gas-free Districts. Based on this, each municipality will draw up by 2021 its</p>	Policy/information	R and NR

MS and name of the program/initiative	Description of objective and scope	Type of barrier(s) addressed	Type
	<p>‘Transition Vision for Heating’ plan for the approach to becoming gas-free. The municipalities will then include the transition visions into implementation plans.</p> <p>Each municipality will indicate:</p> <ol style="list-style-type: none"> 1. How many residential and other buildings will be insulated and/or made gas-free by the end of 2030; 2. Which alternative heating solutions look promising and which heating alternative has the lowest costs for Dutch society as a whole (national costs). 		
CZ/EFEKT programme	<p>EFEKT is the State Program for the Support of Energy Savings prepared by the Ministry of Industry and Trade with the objective to contribute to the fulfilment of the State Energy RWS.</p> <p>LRAs are one of the target groups in several funding initiatives, for example the project concerning the ‘Evaluation of Energy Management (EM) in the Municipalities and Proposal of Further Procedure for the Development of EM ’ aims to offer a concept for the introduction of energy management at the municipal level and a proposal for its implementation. The rationale behind the project is that without data from energy management, LRAs are not able to evaluate the need for and benefits of renovation. This project is followed by the ‘Regional Energy Planning and Technical Assistance in the Preparation and Implementation of Energy Savings Projects’ which aims to create a methodology for the implementation of technical assistance in the preparation and implementation of energy savings projects.</p> <p>The combination of the implementation of the outputs of the above projects will ensure energy planning at the municipal level and will enable even smaller municipalities to evaluate and implement cost-saving measures on their building stock.</p>	Financial/technical	P and NR
BE (Brussels)/PLAGE - Local action plan for	<p>Local action plan for energy management must be established by public authorities that own or occupy a building stock with a floor area in excess of 50,000 m².</p>	Policy	P

MS and name of the program/initiative	Description of objective and scope	Type of barrier(s) addressed	Type
energy management			
IE/Large-Scale Retrofit programme	<p>The Department of Housing, Planning & Local Government provides funding to local authorities in their undertaking of an ambitious programme of insulation retrofitting of the least energy efficient social homes. The programme, launched in 2013, aims to improve the energy efficiency of local authority apartments and houses by reducing heat loss through the fabric of the building, in order to improve comfort levels and address issues around fuel poverty. The programme continues to sustain and create jobs while making a significant contribution to Ireland’s carbon emissions reduction targets and energy reduction targets for 2020, and results in warmer homes and lower energy bills for local authority tenants. The programme is being rolled out on a phased basis (to date, works have been carried out under Phases 1 and 2).</p>	Financial	R

4. Case studies: work at local and regional level

Since deep renovation and energy efficiency interventions are both complex and always evolving, it is important for LRAs to learn from each other's experiences. Even though policy measures and challenges addressing them are mostly context-dependant, learning from others is still a very important and efficient way of disseminating knowledge so that efforts can be better replicated elsewhere. This section presents five short case studies from LRAs in different Member States, all relevant for efforts addressing renovation.

4.1 Picardie Pass-Renovation (Picardie-France)

Targeting private buildings

Addressing financial, technical barriers and lack of awareness

What is it? Developed by the SPEE (Picardy regional Public Service for Energy Efficiency), Pass-Renovation is a financial and technical assistance mechanism for residential buildings. Its primary objective is to boost renovation by addressing the barriers that hinder the uptake of renovation investments by private owners by using different tools which cover the entire project cycle of a renovation and beyond. It has been in place since 2013, starting as a pilot project covering 12 communities and it was expanded to the whole region in 2018. The project was co-financed by the EIB (EUR 23 million loan), the ELENA facility (EUR 1.8 million subsidy covering overhead costs) and the Region of Picardie (EUR 8 million allowance)^{126,127}.

How does it work? The scheme offers different types of support to homeowners: technical support, project management, selection of partner companies and follow up support in the post-project phase. Follow up support also includes training of homeowners to use energy more efficiently and maintenance of equipment. Pass-Renovation uses a third-party financing mechanism (TPF) which allows the homeowners to receive an advance on their investment. As a condition for accessing financial support, the renovation works must lead to energy savings of

¹²⁶ Website of Pass Renovation Picardie, available at: <https://www.pass-renovation.picardie.fr/project-funded-by-europe/>, accessed: 02.12.2020.

¹²⁷ Fedarene, Best Practices Inventory, Webpage for Pass Renovation Picardie, available at: https://www.fedarene.org/best_practices/pass-renovation-reducing-energy-consumption-in-french-residential-buildings, accessed 02.12.2020.

at least 40 %¹²⁸. The revenues generated by these energy savings are used to pay the cost of the renovation over a given period of time (for instance 15 years)¹²⁹.

What did it achieve? The scheme covers 100 % of the regional territory with 40 local authorities. By 2018, the mechanism had created 650 jobs in the renovation sector and 2000 households had participated in the scheme. Renovation projects achieve energy savings of 40 % on average.

Critical analysis of the strong points

Using an innovative and flexible financing mechanism. Third-party financing models such as ESCO and EPC are increasingly used to finance energy efficiency projects. Pass-Renovation is one the first instances where such a mechanism is used by a public authority. TPF removes the barrier of initial investment for private households and creates a guarantee for the energy saving performance of renovation works.

Targeting more than one challenge at once. The mechanism aims to combat energy poverty, reduce energy bills, support the local construction sector and craftsmen and support innovation.

Considering rural areas and smaller communities. Pass-Renovation pays special attention to rural communities whose energy bills are 23% higher on average.

Forges relations at local level. Pass-Renovation is used by local authorities to offer a financial and technical solution to their residents. By doing so, they also promote local businesses and provide opportunities to SMEs to participate in the scheme, becoming trusted partners.

Clear links with European Projects. The SPEE is also participating in cooperative projects such as Triple-A which is an EU funded project (through Interreg 2 Seas and ERDF) that aims to *stimulate the uptake of adoption of low-carbon technologies by homeowners by raising awareness and easy access*¹³⁰.

¹²⁸ Moncrette, A., 2018, Presentation Slides for Pass Renovation Picardie, available at: https://ec.europa.eu/energy/sites/ener/files/documents/5.4_picardie_pass_renovation_alice_moncrette.pdf, accessed: 02.12.2020.

¹²⁹ Website of Pass Renovation Picardie, available at: <https://www.pass-renovation.picardie.fr/project-funded-by-europe/>, accessed: 02.12.2020.

¹³⁰ Website of Pass Renovation Picardie, available at: <https://www.pass-renovation.picardie.fr/project-funded-by-europe/>, accessed: 02.12.2020,

4.2 BEreel!(Belgium Renovates for Energy Efficient Living) (Flanders and Wallonia, Belgium)¹³¹

Targeting local and regional authorities, private sector and citizens

Addressing technical and other capacity barriers, lack of cooperation between different stakeholders, lack of citizen engagement.

What is it? Active since 2019, BEreel! is a joint initiative involving a diversity of actors working towards the improvement of renovation rates of private houses in the Flanders and Walloon regions. Ultimately, the initiative will help the regional authorities to meet their renovation targets for 2050. Different actors involved in the initiative are collaborating to design, implement, test and evaluate structural measures to boost the renovation rates in order to identify the most effective and promising approaches. BEreel! receives funding from LIFE Integrated Projects and involves five cities (Antwerp, Ghent, La Louvière, Mechelen and Mouscron) and the Flemish Energy Agency, Walloon Public Service (Energy Department), Flemish Environment Agency, Scientific and Research Centre for the Construction Industry and Flemish Cities Association.

How does it work? The initiative is built on five main pillars: 1) new policy tools, 2) innovative business models for financing renovation, 3) involving a large diversity of dwelling types in the deep renovation wave, 4) capacity building, and 5) communication. Each of these tools involves different sub-topics and projects. For instance, while pillar 1, new policy tools is aiming at developing and testing different policy measures to support the uptake of renovation such as buildings passports and roadmaps, pillar 5 –communication-and pillar 4 -capacity building-are horizontal, aiming at disseminating results and encouraging cooperation between all the stakeholders involved.

What did it achieve? BEreel! is a comprehensive initiative with quantifiable and qualitative impacts. Overall, it aims to improve the policies regarding renovation and the implementation of projects on the ground. For instance, under pillar 3, 8,500 units will be renovated as a pilot step to learn from experiences of renovation from different types of housing units. Currently, there are 28 ongoing projects under five pillars, involving different actors. Lessons learned from these projects will be systematically communicated at a larger scale.

¹³¹ Unless stated otherwise, all information is gathered from the BEreel initiative website. <https://be-reel.be/fr>.

Critical analysis of the strong points

Holistic approach. BeReel! is a ‘package’ initiative which relies on different components, all of which are necessary for the success in boosting the uptake of deep renovation. Addressing multiple aspects of the challenge such as financial, technical and social barriers increases the impact of all of the components, reinforcing each other.

Building networks between diverse actors. Encouraging collaboration between cities, research centres and the industry provides the ground for mutual learning between these diverse actors which do not have the reflex of working together. The diversity of know-how and perspective brought by these different actors provides a more complete picture to work with and ensures the robustness of the approaches and measures that are being tried to increase renovation rates.

Developing a nuanced approach. Under pillar 3, the initiative will explore the renovation of diverse buildings in a variety of contexts (8,500 buildings in total). This will help to create building typologies as well as adapted approaches to different groups of beneficiaries. Under pillar 2, different innovative business models are being tested for these different contexts such as big apartment blocks, turn-key offers and district level interventions. Given the highly varied nature of buildings, living situations and financial resources available to the end users, this process has a great potential of providing nuance for measures and policies that often use one-size-fits-all approaches.

Identification of innovative methods for upscaling. BeReel! is designed as a learning tool: innovative pilot cases are first assessed and then applied to larger scale demonstration projects. This exercise aims to develop approaches that can be upscaled to larger interventions and policy measures. Innovative approaches are not only limited to one aspect, but cover different issues such as financial tools, use of certain techniques or technologies (e.g. solar panels). Moreover, these innovative solutions are designed and tested according to building typologies and the context describe above.

4.3 Energy retrofit of Fasa Residential District in Valladolid (Spain)

Targeting local authorities, public and private buildings

Addressing financial barriers, district level intervention

What is it? The project, running between 2017-2020, entails the energy rehabilitation of the Fasa Neighbourhood. The neighbourhood hosts housing units built for the workers of the Fasa car factory (now Renault) in the 1960s and 1970s. There are around 400 housing units, one 14 storey tower and other communal areas in the focus area. The project involves multiple interventions to all of these buildings such as thermal insulation of facades and installation of heating using renewable energy (biomass and photovoltaic panels)¹³².

How does it work? The project is a collaboration between the home-owners and tenants, the municipality, as well as the European H2020 Remourban Project¹³³. The latter has a larger scope which aims to use smart technologies for the regeneration of urban spaces and creates an important dimension of the project, also providing networks of collaboration between different cities and research institutes. The project is supported by European, private and public funding. The residents are active participants in the project, taking part in decisions and acting as beneficiaries.

What did it achieve? Thermal renovation of the Fasa neighbourhood enables a complete transformation of heating systems both at district and building level, including the thermal station that will provide 80 % of the thermal energy from biomass, along with the distribution network¹³⁴. When completed, it will enable the neighbourhood to be at least partially self-sufficient for energy production with efficient resource use. This will lead to a 40 % decrease in energy demand and around 160,000 kwh/year savings. The project is also considered to have improved the quality of life of the occupants significantly, having revitalised the neighbourhood¹³⁵.

Critical analysis of the strong points

District level intervention. One frequently mentioned challenge for larger uptake of deep renovations is the lack of larger scale interventions which hinders the maturation of the market and securing of necessary financing from private investors. District level interventions are one of the ways that help to address these issues. Moreover, they enable the complete transformation of the whole system increasing the effectiveness and the impact of the intervention. For instance, variable flow pumping units installed both at district and building level regulate

¹³² Planup, Project Information: Energy rehabilitation of the FasaDelicia district in Valladolid. Available at: <https://cdn.webdoos.io/planup/d87f9edb43e1c0b6bb92650d7fcd1e12.pdf>, accessed: 17.11.2020.

¹³³ Regeneration Model for accelerating the smart URBAN transformation (ReMOUrban Project), website available at: <http://www.remourban.eu/>, accessed 17.11.2020.

¹³⁴ Garcia Fuentes M., et al., 2017, Retrofitting of a Residential District under Near Zero Energy Buildings Criteria, Proceedings 2017, 1, 686; doi:10.3390/proceedings1070686.

¹³⁵ ¹³⁵ Planup, Project Information: Energy rehabilitation of the FasaDelicia district in Valladolid. Available at: <https://cdn.webdoos.io/planup/d87f9edb43e1c0b6bb92650d7fcd1e12.pdf>, accessed: 17.11.2020.

the flows according to real demand¹³⁶. In this case, both levels work together to achieve maximum efficiency.

Empowering citizens. Citizen participation and social acceptance is one of the main pillars of the project. Active participation of citizens in all stages of the process, particularly the design phase, is ensured through a strong engagement strategy¹³⁷. An initial challenge was the reluctance of some of the residents about the project who doubted the potential benefits and who were expected to contribute financially to the renovation works. The outreach campaign was then adapted to engage directly with these residents. The key was to build trust using straightforward and clear messages and to better include them in the decision-making process. A key element was to get citizens to convince others, rather than relying on experts or companies¹³⁸.

4.4 Using Public-Private Partnership (PPP) for modernising municipal buildings (Plock and Karczew, Poland)

Targeting local authorities, public buildings

Addressing financial barriers

What is it? The towns of Plock and Karczew have been using PPP models to finance the retrofitting of public buildings. Ten buildings (schools, kindergartens and a health centre) were retrofitted in Karczew 2011 and 2013¹³⁹. In Plock, 24 buildings (schools, kindergartens, swimming pools and the city hall) are being retrofitted^{140, 141}. Improvements to the buildings include the modernisation of heating systems, replacement of windows and frames, thermal insulation of walls, replacement of coal with natural gas for heating, switch from electric to district heating, modernised lighting installations and energy use monitoring and controlling systems.

How does it work? The projects involve a PPP (Karczew) and ESCO (Plock)

¹³⁶ Garcia Fuentes M., et al., 2017, Retrofitting of a Residential District under Near Zero Energy Buildings Criteria, Proceedings 2017, 1, 686; doi:10.3390/proceedings1070686.

¹³⁷ Ibid.

¹³⁸ European Commission, Cordis News: Reaching out to the hearts and minds of citizens in transforming cities, available at: <https://cordis.europa.eu/article/id/411660-reaching-out-to-the-hearts-and-minds-of-citizens-in-transforming-cities>

¹³⁹ Interreg Central Europe, (no date), Best Practice Handbook.

¹⁴⁰ BuildUp, (no date), Energy modernization of municipal facilities following the ESCO formula.

¹⁴¹ It is not clear whether the works are finished.

financing scheme. In both towns, a private company is the private partner and is carrying out the renovation works as well as after-service and monitoring. The projects cost around EUR 2.7 million for Karczew and around EUR 7.5 million in Plock. Company's involvement seems to be bigger in Plock where the company appears to be the sole source of financing under the ESCO model, whereas in Karczew the project received additional funding from the National Fund for Environmental Protection and the Green Investment Scheme¹⁴². For the project in Plock, energy savings resulting from the renovation works will take 17 years to pay back the initial investment.

What did it achieve? In Karczew, the renovation works are completed. Monitoring of the results show that the works achieved 58 % savings on heating and 20 % on electricity for the year 2014. Additionally, works are reported to have improved the aesthetics of the buildings¹⁴³. In Plock, the company expect an overall 34 % energy savings.

Critical analysis of the strong points

Scalability and replicability. PPP models such as ESCOs are considered to be easily replicable and provide an important leverage for financing projects. This is an important aspect for countries like Poland, where the EU funding used for renovation and energy efficiency projects remain lower than the EU average¹⁴⁴. Furthermore, additional funding from EU funds can also be used to increase interest from private partners and to scale up the projects¹⁴⁵. The potential for renovation works is considered to be big given the high number of public buildings that need thermal modernisation¹⁴⁶.

Use of public buildings to lead the work.

Since public buildings make up an important share of building stock, their role in kick-starting the renovation initiatives is crucial. These works result in accumulated experience for all parties involved and can be then transferred to other projects. Moreover, such projects help to create a network of adequately trained professionals, providing a clear signal to the businesses about the benefits of acquiring the necessary skills.

Good use of data and monitoring. Both projects have a good system for

¹⁴² Interreg Central Europe, (no date), Best Practice Handbook.

¹⁴³ Ibid.

¹⁴⁴ Firlag S., et al., 2018, An overview of public funding allocation for the renovation of buildings in Poland, Report for BPIE.

¹⁴⁵ Ibid.

¹⁴⁶ BuildUp, (no date), Energy modernization of municipal facilities following the ESCO formula.

monitoring the results so that the real impacts can be measured. In Karczew, the energy savings are monitored via meter readings and invoices from energy suppliers every year¹⁴⁷. In Plock, remote reading systems installed during the renovation works allow for room temperatures and lighting to be monitored and controlled, providing accurate data on consumption patterns¹⁴⁸.

4.5 Renovating social housing units in Calarasi (Sud-Muntenia, Romania)¹⁴⁹

Targeting residents of social housing

Addressing financial barriers, technical barriers

What is it? The project consisted of the thermal rehabilitation of 60 dwellings (apartments) in the K17 block social housing complex in the city of Calarasi, south-east Romania. The project cost around EUR 200,000 and was co-financed by local and national funds, ERDF, and a non-interest loan from the local government and was completed between 2014-2016. The renovation had multiple objectives: thermal rehabilitation of the apartments but also to stimulate green jobs and local businesses and the quality of life of the beneficiaries, who are low income citizens.

How does it work? The project focused on the thermal insulation of walls and replacing windows and doors. Through the joint financing mechanism, tenants were given the opportunity to pay back the loans (which covered their share of costs) over a five-year period through energy savings.

What was achieved? The results indicate that there was a 40 % increase in energy savings, and living conditions were improved through better thermal comfort and reduction of noise pollution. The joint financing mechanism significantly reduced the financial burden on the end-users. Furthermore, the local economy was supported since the project used local contractors, who underwent training to address knowledge gaps about energy efficiency improvements.

¹⁴⁷ Interreg Central Europe, (no date), Best Practice Handbook.

¹⁴⁸ BuildUp, (no date), Energy modernization of municipal facilities following the ESCO formula.

¹⁴⁹ Unless where stated otherwise, all information comes from the Interreg webpage dedicated to the project, available here: <https://www.interregeurope.eu/policylearning/good-practices/item/504/thermal-rehabilitation-of-k17-block-in-calarasi/>.

Critical analysis of the strong points

Supporting local economy through creating demand and training

Since an important barrier to renovation projects is the lack of trained construction professionals with up-to-date knowledge about energy retrofits and thermal rehabilitation, this project provides an inspiring example. Instead of importing the work, the decision was made to use the local workforce by creating a training opportunity for them. Coupled with the demand created by the renovation of 60 dwellings, this creates an important incentive for the local business and craftsmen to acquire the skills required for such renovation works. The knowledge and experience gained through training and the actual works can then be transferred to other projects, creating an important local strength for future projects.

Addressing energy poverty, social housing and energy efficiency together

There is a complex relationship between building renovations, social housing and energy poverty. The public budgets available to social housing are increasingly limited, which results in sub-optimal living conditions¹⁵⁰. The renovation costs – even when mostly covered by public funds – present an important barrier for the low-income households. This means that people who can greatly benefit from cost savings through energy efficiency and improved life conditions through better dwellings, are the ones who have the least access to housing renovations. By using a joint funding mechanism, the project significantly lowers the financial barrier for end-users and addresses three issues at once.

¹⁵⁰ European Investment Bank Group, 2020, Social and affordable housing overview.

5. Assessment of the Renovation Wave Strategy

On 14 October 2020, the European Commission published its Renovation Wave Strategy¹⁵¹ ('the RWS'). The RWS clearly recognises a very slow pace of building renovations across Europe - only 1 % of buildings undergo energy efficient renovation every year, and only 0.2 % of those are deep energy renovations.

The important role of local and regional actors in making the renovation wave a success is highlighted throughout the RWS. It refers to the mobilisation of cities and local authorities as key to sustaining the renovation wave and emphasises the role of networks and initiatives facilitating good practice exchange and information and knowledge sharing¹⁵².

The RWS focuses on action in three key areas considered a priority for policy and financing due to the biggest potential for increasing renovation rates: decarbonisation of heating and cooling; tackling energy poverty and worst-performing buildings; and renovation of public buildings including schools, hospitals and administrative buildings. The role of LRAs was highlighted again as, together with the utility companies, they play an important role in creating the necessary regulatory framework, market conditions and skills, and in preparing a robust pipeline of projects to finance in the field of heating and cooling modernisation.

Overall, the RWS addresses a number of challenges faced by the LRAs proposing a variety of measures from which LRAs will directly benefit. From a multitude of financial mechanisms through technical support available for LRAs to proposed changes in policy to improve regulatory frameworks, the proposed measures certainly move in a positive direction.

Nevertheless, some shortcomings and thus scope for improvement were identified. These are mainly related to lack of more targeted funding and lack of more detailed approach when it comes to the revision of legislative frameworks. It would also be beneficial to further explore measures to support LRAs in other areas such as communication with the public and targeted awareness raising campaigns on local and regional levels. Although the RWS sets out prospects for green jobs creation and upskilling of workers, it is short on some aspects related to attracting future green jobs employees such as quality of work aspects, fair pay, social conditions of workers, including well-being, working time and work-

¹⁵¹ European Commission, 2020, A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives, SWD (2020) 550 final.

¹⁵² A number of these initiatives are described in section 1.3 of this report.

life balance.

Availability of financing for renovation has been highlighted as one of the significant challenges experienced by the LRAs. This fact is well recognised by the RWS which makes one of its intervention areas focused solely on making available adequate and well-targeted funding.

In order to achieve this, the RWS proposes a set of targeted measures. Firstly, in order to increase the volume of funding, a variety of sources will be made available from which LRAs can directly benefit – there is the ‘traditional’ MFF 2021- 2027 plus, as a response to the crises caused by the pandemic, the recovery instrument Next Generation EU. Within this instrument, Recovery and Resilience Facility (RFF)¹⁵³ will be available to support renovation investment and energy efficiency since 37 % should be targeted to climate-related expenditure.

Furthermore, the RWS refers to the Commission’s practical Guidance for the development of Recovery and Resilience Plans to be prepared by the Member States until April 2021 as part of the RFF facility¹⁵⁴. This Guidance identified building renovation as a priority for national recovery plans under the European Flagship ‘Renovate’. LRAs can use this opportunity to include their ready to market projects in these recovery plans.

However, to really increase the volume of renovation related investments, it would be more beneficial to specify a concrete proportion of funds allocated directly to the renovation sector instead of more general climate related investments, as these cover a much broader range of potential projects. The current mainstreaming and general climate ear-marking structures do not seem to provide sufficient funding for renovation projects. Although the RWS recognises the investment gap, it fails to propose a more targeted scheme for renovation projects at MS or local level.

Moreover, in order to increase the accessibility and the availability of funding, the Commission’s intention laid out in the RWS to allow and further work on the possibility to combine various EU funding instruments is to be viewed positively. This will include a combination of national and private funds, grants, loans, technical assistance and project development support with a view to increasing the use of these instruments’ and ensure a bigger impact of investments. The issue of allowing different funding sources to be combined was pointed out as an

¹⁵³ European Commission, Press Corner: Questions and answers: Commission presents next steps for €672.5 billion Recovery and Resilience Facility in 2021 Annual Sustainable Growth Strategy, available at: https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1659, accessed: 02.12.2020

¹⁵⁴ European Commission, 2020, Commission staff working document: Guidance to Member States Recovery and Resilience Plans SWD(2020) 205 final.

important element by association of local stakeholders in their assessment of the Renovation Wave RWS¹⁵⁵. Support from other EU programmes such as InvestEU, the Connecting Europe Facility, LIFE and Horizon Europe, as well as national funds, can already be combined with the above-mentioned Recovery and Resilience Facility.

Further, the RWS signals a plan to set up a standardised one-stop shops (OSS) that can be deployed quickly at national, regional or local levels with an objective to deliver tailored advice and financing solutions for homeowners or SMEs throughout the preparation and implementation of their projects. LRAs will be able to further build on this platform to create competence centres for various types of advice on sustainable renovation. This is an important step forward with the potential to really speed up the progress on renovation at all levels (targeted communication of the OSS availability and its quality will be crucial in this regard).

To further guide public authorities in their renovation progress, the RWS brings attention to the European Smart Cities Marketplace¹⁵⁶ which offers a successful design to guide the authorities when deploying building renovation investments as part of urban renewal¹⁵⁷.

RWS underlines the potential to renovate 35 million buildings and create up to 160,000 additional green jobs in the construction sector by 2030. In order for LRAs to fulfil this potential, a particular challenge will be presented by the need to prepare high quality projects carried out by skilled workforce with long term impact, avoiding project fragmentation and ensuring efficient cooperation with the national governments so LRAs' projects are included in the national strategic planning. In this regard, technical assistance in preparing projects, providing technical knowledge to workers and training new professionals will be crucial.

Steps envisaged by the RWS in this regard signal a positive move forward. The RWS plans to provide for simplified and reinforced technical assistance which is envisaged to also target smaller size beneficiaries. There are also plans for the Commission and the European Investment Bank to facilitate with replicating the ELENA model at national and local levels. A combination of various funding sources will be made available for this purpose¹⁵⁸. The ELENA facility itself will

¹⁵⁵ Eurocities, 2020, Briefing for Members: EU Renovation Wave Strategy, available at: http://nws.eurocities.eu/MediaShell/media/Renovation_Wave_Briefing_for_sharing_1_.pdf, accessed: 02.12.2020

¹⁵⁶ described in section 1.3.

¹⁵⁷ EU Smart Cities Information System, Lighthouse Projects Portal, available at: <https://smarcities-infosystem.eu/scc-lighthouse-projects>, 02.12.2020.

¹⁵⁸ 3 financing streams are envisaged: cohesion policy funds (as a stand-alone support or as a part of a financial instrument operation), the Member State compartment of InvestEU, or the Recovery and Resilience Facility.

be strengthened, and additional finance will come through the InvestEU Advisory Hub. Technical knowledge of construction workers and their need for specific skills is also addressed by the RWS. It plans to launch the Pact for Skills bringing together private and public stakeholders with the shared objective of up- and reskilling Europe's workforce. The RWS highlights several financial instruments available to support upskilling and training the workforce - the Next Generation EU funds, the European Social Fund+ and the Just Transition Fund. The Build Up Skills initiative¹⁵⁹ is referred to as a tool which enables Member States to update their gap analysis and National Roadmaps for training as the Commission will develop training material on the use of Level(s)¹⁶⁰ in 2021. These initiatives are assessed positively as the RWS tries to bring forward the ambition to create green jobs, while recognising the need for training the workforce and attracting renovation specialists. It also strives to take more a holistic approach by strengthening the presence and role of women in the construction sector and the important role of social partners in designing and implementation of the measures to upskilling workers.

However, as pointed out by an association of local stakeholders, the RWS does not look at specific aspects related to fair pay, organisation of work, the well-being, working time and work-life balance of these workers which would further increase green job attractiveness¹⁶¹.

Regulatory and policy barriers experienced by the LRAs are also, to some degree, addressed by the RWS. Rigid legislative frameworks are planned to be tackled by setting up simpler, clearer and easier to apply State Aid rules for building renovation, in particular in the residential and social sectors, and clarifying the scope of State Aid for renewable energy installations for self-consumption. State aid rules to facilitate co-financing of InvestEU guarantees by Member States are already being revised by the Commission. The RWS also envisages the creation of simplified rules to allow combining loans with grants, and reward best performing projects with a higher grant rate which is an additional positive step forward.

Another positive point is that RWS signals a need to raise the level of ambition regarding the targets, criteria and definitions contained within the relevant legislative frameworks. The mention of up-coming revisions to EPBD is considered an opportunity to reassess the existing heating and cooling targets, and

¹⁵⁹ Described in section 1.3.

¹⁶⁰ Level(s) is a common European approach to assess and report on the sustainability of buildings. See European Commission, Level(s): The European framework for sustainable buildings, available at: <https://ec.europa.eu/environment/eussd/buildings.htm>, accessed 02.12.2020.

¹⁶¹ Eurocities, 2020, Briefing for Members: EU Renovation Wave Strategy, available at: http://nws.eurocities.eu/MediaShell/media/Renovation_Wave_Briefing_for_sharing_1_.pdf, accessed: 02.12.2020.

minimum level of renewable energies in buildings. In the same vein, RWS's proposal for mandatory minimum energy performance standards, as part of revisions to EPC scheme is to be viewed positively. These changes have the potential to really raise the level of ambition across Europe. However it remains to be seen to what extent the revisions will bring about this higher ambition needed.

Moreover, the RWS sets out the plan to introduce a stronger obligation to have Energy Performance Certificates (EPCs) and to make them available via databases. Currently, there are inconsistencies across the Member States when it comes to define and attribute EPCs¹⁶², resulting in a lack of common understanding and comparable data. The RWS proposed the Commission to set up more stringent provisions on availability and accessibility of databases. This is again to be viewed positively as the uniform approach, as well as a readily available database pinpointing the worst performing buildings, is currently lacking. In addition, a more robust and standardised system of EPCs would also increase the attractiveness of projects for the private investors who would be able to assess the benefits of renovation more clearly and reliably.

Moreover, to increase the annual renovation rate, the RWS envisages the revision of the EED and the need to extend the renovation requirements to buildings at all public administration levels. This is to be viewed positively; however, as stated above, the upcoming revisions of EED and EPBD should incorporate these ambitions and complement them with clear renovation targets on all levels and intermediate milestones.

Moving further, the RWS strives to take more holistic approach to the renovation wave and to provide solutions that have positive economic and social impacts on both national and local level. The need for a more comprehensive, integrated approach was highlighted by the LRAs as another challenge. The RWS takes the right step in this direction as already indicated above - for example, by increasing the presence of women in the construction sector and the inclusion of social partners in the design and implementation of relevant measures. In addition, the RWS envisages dedicated financial products for the energy renovation of buildings that will target the residential sector and focus on, inter alia, social and affordable housing, public buildings, schools and hospitals. The RWS also touches on the importance of social enterprises in tackling energy poverty through socially innovative solutions, including energy awareness campaigns or retraining unemployed people to energy poverty advisors. For LRAs, this is an opportunity to collaborate with the social sector on these issues and receive targeted funding.

¹⁶² Eurocities, 2020, Briefing for Members: EU Renovation Wave Strategy, available at: http://nws.eurocities.eu/MediaShell/media/Renovation_Wave_Briefing_for_sharing_1_.pdf, accessed: 02.12.2020.

Last but not least, LRAs cited lack of awareness about funding and technical support options available to them as another potential obstacle. Despite the existence of a myriad of informational sources, LRAs experience difficulties in navigating and using this information. It is to be viewed positively that the RWS recognises the need to support mutual learning, for instance by the means of sharing good practices. However, it is important to use the existing sources more efficiently before creating new ones. For instance, successful initiatives such as the Covenant of Mayors could be built on.

Based on the above assessment, it is clear that the adoption of the RWS is an important step to kick start the EU-wide renovation process and the document itself addresses a number of the challenges faced by LRAs. However, some important aspects to address remain, such as more targeted funding and to ensure a sufficient level of ambition is integrated into the legislative and policy frameworks.

6. Solutions and recommendations

This section presents a series of solutions to overcome the barriers identified in Section 2 and provides recommendations as to how to put them in place and maximise their effectiveness. Barriers sometimes reinforce each other creating a vicious circle, and solutions can address more than one barrier at once. Solutions are categorised using the same typology of barriers (financial, regulatory, technical capacity or awareness raising).

Local contexts should always be taken into account when addressing specific challenges and for each LRA, the right combination of the different measures will depend on multiple factors¹⁶³. Nevertheless, the recommendations can serve as a starting point. They are identified through a review of relevant literature, case studies and input from LRAs, both provided through survey and desk research¹⁶⁴.

6.1 Legislative and regulatory measures

The barriers explained in section 2.1.1 indicate a need to provide a legislative and regulatory framework which works as an overall enabler, taking into account different pieces of legislation and processes that have to come together to effectively support ambitious renovation policies at local and regional level. At EU level, strong relationships between EED, RED and EPBD are well known and the upcoming revisions to all these frameworks within the Fit for 55 Package is an opportunity to make progress in all of the aspects presented below. Furthermore, it is a positive development that the Renovation Wave acknowledges some of these barriers and signals an intention to address them through revisions to a set of regulatory and legislative instruments.

Resolve conflicts between different frameworks

Findings suggest that coherence between different legislation can be improved by addressing specific conflicts. At EU level, these concern the relation between legislative frameworks such as competition law, financing rules or EU State aid regime. This has implications at both national and local level and is particularly relevant where public bodies provide services to citizens for energy renovations

¹⁶³ Thomas S., (No Date), Energy efficiency policies for buildings: bigEE's recommended policy package, good practice examples and tips for policy design, Report for bigEE Project, Wuppertal Institute.

¹⁶⁴ Input provided by the LRAs and relevant organisations to the European Commission for the public consultation for the Renovation Wave was taken into account through publicly available documents.

(e.g. One-stop-shops)¹⁶⁵. The ongoing efforts from the European Commission regarding the revision of State Aid rules is a positive development in this regard¹⁶⁶. A similar exercise in all relevant fields can create a cascading impact in the sectors where the EU has competency, supporting the work at local and regional level.

At national level, a similar exercise can be carried out to ensure that possible conflicts are identified and resolved. The changes made to the banking licencing rules under the French system (mentioned in Section 2.1.1) to allow the use of ESCO contracts is an example. The changes included an exemption to the pay-back schemes included in the ESCO contracts to allow more flexibility¹⁶⁷ and demonstrates that this can be a lengthy and complicated process, but it is an important step in unlocking promising initiatives¹⁶⁸. Another similar issue is related to innovative financing mechanisms such as crowdfunding and obstacles they face due to existing regulations. Since such innovative ways are increasingly seen as important levers¹⁶⁹ to address the financial barriers, it is important that they can be used effectively by the public institutions or other interested parties.

In the same vein, LRAs should identify such conflicts stemming from local regulations (such as building permits or norms for architecturally significant buildings). Where possible, flexibilities and exemptions can be introduced to existing regulations without jeopardising their primary objectives such as safety or aesthetics.

A more ambitious framework with better implementation

Several recommendations have been made to make the legislative framework at the EU and Member State level more ambitious and to reinforce its implementation at Member State level. For instance, a recent report from the BPIE include the following recommendations regarding legislative and regulatory framework at EU level¹⁷⁰:

- Assess how certain elements included in the EED and EPBD are

¹⁶⁵ Vesta Conseil and Finance, 2018, Inventory of best practices for setting up integrated energy efficiency service package including access to long-term financing to homeowners. Report for INNOVATE Project.

¹⁶⁶ European Commission, Press Release: State aid: Commission publishes results of evaluation of EU State aid rules, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2008, accessed 26.12.2020.

¹⁶⁷ Innovate Project Report, 2018, Extensive analysis of the existing energy efficiency services operators and long-term financing schemes.

¹⁶⁸ Vesta Conseil and Finance, 2018, Inventory of best practices for setting up integrated energy efficiency service package including access to long-term financing to homeowners, Report for INNOVATE project.

¹⁶⁹ Maria E., et al., 2019, Accelerating energy renovation investments in buildings: Financial and fiscal instruments across the EU, Report for Joint Research Centre.

¹⁷⁰ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

performing, including Member State pathways to decarbonisation of the building stock, Energy Performance Certificates (EPCs), obligation to renovate public buildings and the current cost-optimal approach to building renovations which does not take into account wider societal gains stemming from building renovations.

- Introduce new measures such as mandatory minimum energy requirements for buildings.
- Use the upcoming revision of the TEN-E Regulation to support renovation projects, by considering buildings as a main energy infrastructure and defining investments in energy efficiency of buildings as ‘projects of common interest’ thereby encouraging projects from the demand-side¹⁷¹.

At Member State level, some of the recommendations include the following¹⁷²:

- develop long-term strategies that go beyond the EU requirements
- introduce targets which are regularly tightened to reflect latest technological developments¹⁷³ and provide clear signals to citizens and the industry.

Regarding implementation, better transposition of EPBD at Member State level and enforcement of the obligations and a standardisation of EPCs to improve their credibility across Europe have been recommended¹⁷⁴. In the same vein, Member States are encouraged to provide clear roles for the LRAs during policy implementation.

These recommendations are also relevant for the LRAs, who can in some cases go beyond the existing regulatory regimes to introduce more ambitious standards¹⁷⁵ accompanied by clear roadmaps. The roadmaps should include clearly defined targets and milestones^{176,177}; have a clear implementation plan including financial resources; include mainstreaming and monitoring mechanisms; use integrated approaches and aim to align their definitions and methods with European level guidance.

¹⁷¹ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹⁷² Ibid.

¹⁷³ Global Buildings Performance Network, 2014, Reducing energy demand in existing buildings: learning from best practice renovation policies.

¹⁷⁴ Artola I., et al., 2016, Boosting Building Renovation: What potential and value for Europe?, Trinomics Study for the European Parliament ITRE Committee.

¹⁷⁵ Ibid.

¹⁷⁶ Global Buildings Performance Network, 2014, Reducing energy demand in existing buildings: learning from best practice renovation policies.

¹⁷⁷ Castellazzi L., et al., 2019, Assessment of second long-term renovation strategies under the Energy Efficiency Directive, Joint Research Centre Report.

Adopt a holistic approach

Linked to ensuring coherence between different legislative and regulatory instruments, all future policies and revisions to existing ones need to adopt a holistic approach. This would not only tackle some of the barriers identified, but also create additional benefits creating synergies between different policy fields so that they mutually enforce each other and was found to be an important success factor¹⁷⁸. By definition, living spaces and how they are organised - both as isolated units and in dynamic relation to others - have an impact on a wide range of issues including climate mitigation and adaptation, circular economy, biodiversity and sustainable mobility. Furthermore, building renovations have long-term implications and large-scale impacts. For instance, the construction sector remains one of the most polluting in Europe in terms of waste generation and GHG emissions¹⁷⁹. Legislative frameworks should address the issue, not exacerbate it, while encouraging building renovations. They should encourage a life-cycle approach¹⁸⁰ and consider the impacts that go beyond the immediate energy savings.

Another necessary aspect of a holistic policy approach to building renovations is the social dimension: important points include gender mainstreaming while thinking about renovations and taking into account the needs and priorities of more vulnerable groups in society. Policies should be designed in a way to address energy poverty and to ensure that renovations do not negatively impact the housing security of low-income households¹⁸¹. In the same vein, addressing multiple dimensions at once, including social and economic issues pertinent for the local groups, were found to have a higher success rate and enjoy greater acceptability¹⁸². If policies are designed in a way to create such synergies at EU and national level, they will encourage the multiplication of successful projects at local and regional level.

RW underlines the importance of place-based and holistic approaches, including social dimension and the lifecycle approaches, which is considered as a positive signal¹⁸³. However, specificities of how these will be achieved is the key to

¹⁷⁸ Global Buildings Performance Network, 2014, Reducing energy demand in existing buildings: learning from best practice renovation policies.

¹⁷⁹ European Commission, Construction and Demolition Waste, available at: https://ec.europa.eu/environment/waste/construction_demolition.htm, accessed: 26.11.2020.

¹⁸⁰ BPIE, 2020, An Action Plan For The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹⁸¹ BPIE, 2017, Policy Factsheet: Trigger points as a “must” in National Renovation Strategies.

¹⁸² Saheb Y., et al., 2019, From nearly-zero energy buildings to net-zero energy districts, Joint Research Centre Study.

¹⁸³ European Commission, 2020, A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives, COM(2020) 662 final.

determining whether enough is being done in this regard.

At local level, LRAs can achieve such synergies based on their local strengths – e.g. the use of local renewable energy sources or making use of the local work force to create jobs by planning renovation interventions in a holistic way¹⁸⁴. Moreover, where available, they are encouraged to integrate their renovation strategies and their sustainable energy and climate plans to create synergies¹⁸⁵.

Use a flexible approach that empowers LRAs

Findings suggest that there is a need for flexible approaches, and one-size-fits-all solutions are not the most effective due to differences in capacities, resources or needs across the EU. Therefore, legislative frameworks at EU and national level have to find a balance between introducing more ambitious requirements exemplified above and a certain flexibility that takes into account the local contexts. For instance, trigger points which is recommended as an important policy lever to encourage deep renovations¹⁸⁶ are said to function best when adapted to different building types and contexts¹⁸⁷.

Another important element frequently mentioned is introducing mechanisms to allow the LRAs to aggregate renovation projects to increase their chances of success by accessing EU funds¹⁸⁸. Furthermore, LRAs should be empowered to adopt their own more ambitious building code requirements¹⁸⁹ and regulations at national level should allow district level approaches when it comes to energy supply¹⁹⁰ and heating and cooling plans¹⁹¹. These examples demonstrate the importance of locally designed policies. Therefore, policies at EU and national level should be designed in a way to empower the LRAs to develop their own approaches, supporting them with financial and capacity building instruments.

Strengthen governance structures

Renovation projects require the participation of diverse actors and function best when accompanied with holistic approaches. As the findings of this report

¹⁸⁴ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹⁸⁵ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

¹⁸⁶ BPIE, 2017, Policy Factsheet: Trigger points as a “must” in National Renovation Strategies.

¹⁸⁷ BPIE and INVIE, 2020, Final report – Technical study on the possible introduction of optional building renovation passports, Study for European Commission DG Energy.

¹⁸⁸ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

¹⁸⁹ BPIE, 2020, An Action Plan For The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

¹⁹⁰ Input from LRAs to this public consultation were downloaded and analysed for this study.

¹⁹¹ Kruit K., et al., 2020, Zero Carbon Buildings 2050: Summary Report, CE Delft Report for European Climate Foundation.

demonstrate, a multitude of policy fields, actors, sectors and enabling conditions have to come together in order to reach the level of ambition required in the coming decades. This makes strong governance structures, cascading from the EU to local level a necessary element of successful policy action. For the EU level policies, most of the barriers identified here seem to derive from the difficulty of reconciling the flexibility of policies with ambition, while taking into account the diversity of contexts on the ground. The best way to approach this is to actively engage with the LRAs in a systematic manner before the policies are designed. Traditional, one-way consultation activities are insufficient to respond to complex needs and the multi-faceted nature of encouraging deep renovation across Europe. For the Member State level, LRAs should be systematically consulted, both within the general framework of EU legislation as LTRSs and others which derive from National legislation or other policy initiatives. In turn, LRAs should engage with local stakeholders and should have a sound understanding of the local market conditions, resources available as well as the limitations.

6.2 Financial measures

Financial measures are mostly focused on tackling the current investment gap for renovation projects. The main solution to address this issue is to provide targeted public funding to building renovations, mobilise private investment and design innovative ways to create combined private and public funding. Moreover, all of these solutions will need to cover different types of buildings, both public and private.

Financial instruments present a great diversity including grants and subsidies, loans and fiscal instruments such as preferential tax schemes. There is no ideal approach and each of these instruments come with their advantages and inconveniences¹⁹². The mix should be adapted to local circumstances and ideally integrated within broader national programmes¹⁹³. Partly, these financial measures will be enabled by the legislative frameworks, as explained above. However, they are also related to the technical capacity within LRAs to access and use the funds efficiently, which is discussed in the next section. This section focuses on the ways in which the investment gap can be overcome and how available resources can be used more efficiently at local and regional level.

¹⁹² See for instance, the JRC report on financing building renovations: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC117816/accelerating_energy_renovation_investments_in_buildings.pdf.

¹⁹³ Ibid.

Targeted EU funding for renovation projects

The underspending of EU budgets in the field of building renovations and energy efficiency investment is an important sign that the sector might need more targeted financial support. The 2021-2027 MFF was an important opportunity to provide a dedicated budget for energy efficiency in buildings¹⁹⁴ and building renovations¹⁹⁵. However, as it stands, such a mechanism is not included in the MFF. The financial support needed for deep renovation policies and projects is bundled together with other climate-related spending. On the other hand, renovation of buildings and energy efficiency projects are specifically mentioned under the Just Transition Mechanism, specifically pillar 2, InvestEU and pillar 3, EIB loan facility both of which can provide financial support to LRAs in the form of loans which will leverage private financing¹⁹⁶.

Another proposal is the establishment of a European Renovation Fund, advocated by Renovate Europe, an umbrella initiative of industry actors active in energy efficiency and renovation; this is also supported by partners such as Energy Cities and Fedarene¹⁹⁷. The proposal suggests the inclusion of a targeted fund within the EU Recovery plan to provide EUR 100 billion annually focusing on the worst performing buildings, low income neighbourhoods, and other buildings of social significance such as retirement homes, hospitals and social housing. The funds would be managed at EU level and accessible to a variety of actors, including LRAs, via fast-tracked project approval process. Priority would be given to projects that are ready to implement with high potential for energy savings¹⁹⁸. Some of the elements of this proposal, such as a fast-track approval process, were also mentioned by some of the LRAs and umbrella organisations (e.g. Eurocities) participating in the consultation on the Renovation Wave organised by the European Commission¹⁹⁹. This is mentioned in the context of reducing the administrative burden and allowing more direct financial support to LRAs.

As an alternative to specific ring-fencing of EU budgets, some steps can be taken at Member State level to provide targeted financial support for renovation projects. One such recommendation is to include dedicated priorities within Operational Programmes under ESIF that would support the objectives of the

¹⁹⁴ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

¹⁹⁵ Dumitriu F., et al., 2018, Focus on local and regional renovation strategies, Policy Brief for Publnef Project.

¹⁹⁶ European Commission, Just Transition Funding Sources, available at: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism/just-transition-funding-sources_en, accessed: 02.12.2020.

¹⁹⁷ Renovate Europe Website, available at: <https://www.renovate-europe.eu/about-the-campaign/partners/>.

¹⁹⁸ Renovate Europe, 2020, Proposal for European Renovation Fund, available: https://www.renovate-europe.eu/wp-content/uploads/2018/09/REC_Let_VDL_Com_Econ_Recovery_April_2020_Final.pdf, accessed 27.11.2020.

¹⁹⁹ Input from LRAs to this public consultation were downloaded and analysed for this study.

Renovation Wave²⁰⁰. Member States can also establish their own dedicated renovation funding schemes – this is already the practice in some countries, such as Austria, Germany, France and Ireland²⁰¹.

Encourage private investment

To address the investment gap, it is necessary to mobilise private funding to complement the public funds²⁰². De-risking of investment through the use of the public instruments described above is an important lever, but it might not be enough on its own. Renovation projects have high initial costs with a longer return on investment periods. Therefore, their long-term benefits should be made clear to potential private investors. At EU level, this is recognised and reflected in the latest revisions to the EPBD and the establishment of Smart Finance for Smart Buildings Initiatives by the EIB in 2018²⁰³. The latter aims to provide a better understanding of the risks and benefits of energy efficiency investments²⁰⁴. A similar initiative is the Aldren (Alliance for Deep energy Renovation in buildings) Project²⁰⁵, which is working on a standardised approach for assessing the energy performance of buildings (making use of building passports, energy performance certificates and Common European Voluntary Certification Schemes) and linking this assessment to economic and financial indicators²⁰⁶. The overall objective is to provide reliable and understandable input to project risk assessments. The Renovation Wave recognises this need to unlock new venues for financial products which can be used for renovation projects, for instance through the use of an improved system of EPCs²⁰⁷.

Private sector investors are already using ways to encourage investment in projects that deliver environmental benefits. For instance, leading European banks have been using ‘green tagging’ since 2016 to include such projects into their loan portfolios. Real estate energy efficiency of buildings is considered a promising

²⁰⁰ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

²⁰¹ Grasset H., Scoditti E., Stunning Project, Deliverable 4.1, 2019, Energy Efficiency renovation market mechanisms, trends and barriers.

²⁰² Interreg Europe, 2019, Funding Energy Efficiency through Financial Instruments: A Policy Brief from the Policy Learning Platform on Low-carbon economy.

²⁰³ European Commission, News: Smart finance for smart buildings: investing in energy efficiency in buildings available at: https://ec.europa.eu/info/news/smart-finance-smart-buildings-investing-energy-efficiency-buildings-2018-feb-07_en, accessed 02.12.2020.

²⁰⁴ Ibid.

²⁰⁵ Build UP, Webpage for Aldren Project, available at: <https://www.buildup.eu/en/explore/links/aldren-project>, accessed 02.12.2020.

²⁰⁶ Build Up, Financial benefits of deep renovation could help mobilize further investment and improve market financing conditions, available at: <https://www.buildup.eu/en/news/financial-benefits-deep-renovation-could-help-mobilize-further-investment-and-improve-market>, accessed 02.12.2020.

²⁰⁷ European Commission, 2020, A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives, COM (2020) 662 final.

area²⁰⁸ and is rapidly growing: the green tagging system now includes recommendations for net-zero energy buildings²⁰⁹. Public policy should follow these developments to create synergies and provide enabling conditions for their wider uptake.

Aggregate projects

LRAs can aim to develop mechanisms to aggregate renovation projects at district and municipality level²¹⁰. Such mechanisms result in economies of scale, increase the attractiveness of projects for private investors²¹¹, facilitate access to and use of financial support from EU funds and help LRAs to realise financially viable projects in the long-term²¹². The aggregation of projects can be challenging in a context where tailored approaches are necessary, but a survey of the building stock characteristics can provide an initial idea of the feasibility of such an approach.

Innovative use of available financial resources

New approaches to the use of financial resources can be applied to increase the availability of financing for projects. For instance, combining different types of financial support is recommended and being applied by many projects. Furthermore, as in the case in Slovenia (see section 2.1.1), more innovative ways of financing the projects, such as crowdfunding, could be further explored by the LRAs. When implemented at local level, such approaches will also be more adapted to the context and have potential to engage a wide range of participants as well as provide an example to other LRAs and projects.

Third party contracting, using a private entity such as in this case an Energy Service Company (ESCO) to carry out the renovations is another approach that is gaining ground in the EU²¹³. This approach creates a link between the repayment of initial costs and the energy savings created by the project: the contractor must deliver the energy savings included in the agreement and therefore bears some of

²⁰⁸ Sweatman P., and Robins N., 2017, Green Tagging: Mobilising Bank Finance for Energy Efficiency in Real Estate, Joint Report of Climate and Strategy Partners and UN Environment Inquiry.

²⁰⁹ Global Alliance for Buildings and Construction, International Energy Agency and the United Nations Environment Programme, 2019, Global status report for buildings and construction: Towards a zero-emission, efficient and resilient buildings and construction sector.

²¹⁰ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

²¹¹ BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

²¹² BPIE and INVIE, 2020, Final report – Technical study on the possible introduction of optional building renovation passports, Study for European Commission DG Energy.

²¹³ For instance, the market for ESCO projects in the US is more than two times bigger compared to EU, where it was worth 7.6 Billion USD in 2017 as opposed to 3 Billion USD in the European Union, according to EIB, available here: <https://www.iea.org/reports/energy-service-companies-escos-2>, accessed 28.11.2020.

the financial risk. Such projects also address technical capacity issues since the contractor is offering a package service.

ESCO projects have a growing market but they are still used mainly for non-residential sectors in the EU²¹⁴. There are challenges associated with this approach, such as complex public procurement rules or lack of awareness of such schemes among public administrations²¹⁵. Nevertheless, good practices show that the potential benefits are there, and LRAs should explore the possible uses of ESCO projects, identify and address these challenges, ideally with support and guidance at EU and national level. Where necessary some updated to the regulatory framework in place at EU, national and sub-national level might be required to enable uptake of this and other innovative approaches.

6.3 Measures for capacity building at local and regional level

The successful design, implementation and monitoring of renovation strategies by LRAs requires certain elements. These include:

- creating a robust knowledge base of the available conditions²¹⁶ (inventory of the building stock²¹⁷, current energy performance of buildings);
- decision making tools to create alternative scenarios and cost-benefit analysis for each scenario to identify the most efficient pathways²¹⁸;
- identifying financial mechanisms best suited to the local conditions and needs²¹⁹;
- developing projects to access funds, having an understanding of the citizens' behaviours and perceptions about deep renovations
- an overview of the availability of the professional skills and workforce locally available.

Furthermore, these are linked to efforts to encourage the uptake of renovations by citizens (e.g. setting up one-stop-shops²²⁰) and to increase the appeal of renovation

²¹⁴ EIB, 2018, Report on Energy Service Companies.

²¹⁵ European Expertise Centre, (No date), Guidance on Energy Efficiency in Public Buildings.

²¹⁶ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

²¹⁷ Artola I., et al., 2016, Boosting Building Renovation: What potential and value for Europe?, Trinomics Study for the European Parliament ITRE Committee.

²¹⁸ Castellazzi L., et al., 2019, Assessment of second long-term renovation strategies under the Energy Efficiency Directive, Joint Research Centre Report.

²¹⁹ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

²²⁰ BPIE, 2020, An Action Plan For The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

projects for private investors²²¹. At later stages of the policy cycle, policy implementation policies need to be monitored in order to respond to changing needs and create a dynamic policy process. All of these elements require technical capacity from the LRAs, many of which are not equipped to operate across such a wide spectrum of activity. However, practical examples suggest that there are efficient ways to provide this support. In turn, the improved technical capacity will have other positive impacts including the use of financial instruments and better implementation of legislation at national and EU level²²².

Mainstream technical support into the EU level instruments

Technical support for LRAs can be mainstreamed into EU level policy instruments. Mechanisms such as the ELENA Facility and Horizon 2020 already do this, although improvements can be made to ensure they are used widely and more efficiently. Other instruments including legislative frameworks, other EU funding mechanisms and initiatives for cooperation and networking among the LRAs should systematically incorporate support for technical capacity.

Provide regular training for administrative officials

Administrative officials at local and regional level are responsible for taking important decisions about urban planning, construction permits and many other aspects that have an impact on renovation projects. They can also be directly involved in developing and implementing projects, preparing applications for European funds or public procurement which has great potential to boost the local renovation activities. It is therefore important that they are targeted by capacity building and training efforts. Member States should have an understanding of the required administrative capacity and provide training to staff where necessary. They can also coordinate and facilitate exchange between different cities and regions to foster mutual learning and learning from good practices. This support should be dynamic and aim for ongoing updating of the knowledge base and human skills according to state-of-the-art technology and information regarding building renovations.

Forge relationships across local actors

Another way of acquiring the skills and knowledge needed is making use of existing local networks. Local businesses, research institutes, artists, citizen assemblies and initiatives can provide important support to LRAs who can harness

²²¹ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

²²² BPIE, 2019, Building renovation in the Clean Energy Package: implications at local, national and EU levels.

their collective capacity. Research institutes can contribute to addressing knowledge gaps and provide technical expertise, such as developing decision making tools or providing focused research where needed²²³. Local associations, such as employment agencies, can provide the necessary structures for upskilling the workforce. Businesses can play an active part in the implementation of projects, as in the case of ESCO projects. Creative support from artistic networks can help with communication with the public and awareness raising. Citizens can actively participate in data collection for monitoring, for example by documenting their energy savings after the renovation projects or even actively participate in the design of the policies. These efforts to combine scattered knowledge and capacity would also improve governance structures and ensure that perspectives and needs of local stakeholders are integrated into policy action, leading to better acceptability of projects²²⁴.

Participate in cross-country initiatives and share good practices

LRAs can increase their technical capacity in all of the areas mentioned above by participating in networks across Europe in order to foster mutual learning. Lessons learned from different local contexts can be used across regional and national borders to tackle similar problems. Furthermore, participating in research projects such as those funded by Horizon 2020 can provide opportunities to acquire new skills that can be transferred to other projects and increase awareness among the LRAs, resulting in institutional learning.

6.4 Measures for raising awareness among the local actors

Deep renovation projects necessitate the active involvement of both demand and supply side actors. Interest and engagement from entities relevant for renovations and housing (investors, architects and urban planners, construction and renovation sector workers and SMEs, estate agents, banks and other financing institutions, social housing organisations) and citizens is crucial for mass scale uptake of deep renovation solutions²²⁵. Actors who can provide these solutions (e.g. developers, investors, architects, SMEs) are generally well aware of the latest technologies available, and their potential benefits so they can help their clients make better informed decisions²²⁶. Citizens and other professional clients are more likely to

²²³ Interreg, 2018, Analysis of Current National and Regional/Local Renovation Strategies.

²²⁴ Saheb Y., et al., 2019, From nearly-zero energy buildings to net-zero energy districts, Joint Research Centre Study.

²²⁵ Global Buildings Performance Network, 2014, Reducing energy demand in existing buildings: learning from best practice renovation policies.

²²⁶ Artola I., et al., 2016, Boosting Building Renovation: What potential and value for Europe?, Trinomics Study for the European Parliament ITRE Committee.

actively pursue deep renovation projects if they are already informed about the potential benefits and different support mechanisms (e.g. financial support and technical advice) available to them²²⁷. As presented in the following sections, LRAs can play an important role in raising awareness and catalysing interaction among these different actors.

Targeted communication campaigns

LRAs should plan targeted communication activities to disseminate information to different actors along the supply chain, from construction professionals to citizens²²⁸, enabling them to act in turn as hubs for information dissemination. For instance, estate agents or mortgage providers can provide information to buyers or tenants about the solutions available to them when it comes to energy savings and building renovations. Such approaches should always be tested with local actors and adapted to specificities. In one case, using estate agents to disseminate information about energy savings was tried in the Netherlands (municipality of Midden-Drenthe) without much success²²⁹. However, different circumstances might make this solution feasible.

Information can be provided as a package including information such as wider social benefits, financial support mechanisms for projects and where to get technical advice as well as the existence of any initiatives in place such as building passports or one-stop-shops.

Lead by example

Another way of raising awareness is related to the leading role that LRAs can play as pioneers in implementing deep renovation of public buildings²³⁰. Most of the public buildings (schools, hospitals, town halls) are used by a diverse spectrum of citizens and can act as ‘live examples’ of practical implementation of renovation projects. Information about the project, the benefits (for instance energy savings, comfort improvements or jobs created for carrying out the work) can be explained via informative billboards or other means to inform citizens. This would give the building users an opportunity to experience the improvements first-hand and learn about less tangible benefits. LRAs can facilitate this communication by providing the communication materials to the administration of the buildings or encouraging them to organise such activities as an integral part of the renovation projects.

²²⁷ Bean F., et al., 2018, EmBuild Project Report: Experiences in developing local renovation strategies.

²²⁸ Saheb Y., Shnapp S., Paci D., 2019, From nearly-zero energy buildings to net-zero energy districts, Report for Joint Research Centre

²²⁹ Publenef Project, 2018, Policy brief - focus on local and regional renovation strategies.

²³⁰ BPIE, 2020, An Action Plan for The Renovation Wave: Collectively Achieving Sustainable Buildings In Europe.

Adopt one-stop-shops as standard practice

One-stop-shops (OSS) address multiple challenges from lack of awareness among the public about technical aspects of building renovations to provide them with information regarding available financial support. Their contribution to the success of renovation initiatives is now well acknowledged based on numerous experiences. Therefore, adopting one-stop-shops as standard practice would be a logical next step. The fact that Renovation Wave Strategy signals a joint effort from EIB and the European Commission to support the setting up of standardised one-stop-shops is a good step. This effort has significant potential to be a real game changer, accelerating the efforts across Europe. The design of these OSSs should take into account the local specificities and allow for local-level adaptation to make sure they respond to the needs on the ground.

7. Annexes

Overview: how everything comes together?

The table below provides an overview of all the issues mentioned in different sections of this report: identified barriers for the LRAs to boost renovation projects, solutions at local and regional level, recommendations as to how to make the solutions widely applicable and finally, whether the Renovation Wave Strategy provides positive input in the right direction.

Table 3: How everything comes together? Barriers and recommendations to address them and whether they are included in the RWS

Type of barrier	Recommendation (EU, MS, LRA)	Mentioned in the RW
<p>Lack of coherence between different legislative frameworks</p> <p>Rigid regulations that do not allow innovative approaches</p>	<p>Revisions to different frameworks such as State Aid Regime, competition law, banking and financial regulations to allow for more flexibility (EU, MS)</p>	<p>Partially</p> <p>Revision of state aid rules for renovation sector in planning (particularly for residential and social sectors)</p> <p>Reviews of Mortgage Credit Directive and the Consumer Credit Directive planned</p> <p>Consideration to incorporate environmental, social and governance risks into prudential regulation when reviewing the rules for banks (the Capital Requirements Regulation and Directive) and insurers (the Solvency II Directive)</p>
<p>Lack of ambition and lack of proper implementation</p>	<p>Provide concrete targets, coupled with intermediary milestones which are regularly updated to reflect the latest technology (EU, MS, LRA)</p> <p>Include a clear plan for implementation with responsibilities for different entities</p> <p>Make sure elements under EED and EPBD are ambitious enough and are fit for purpose (EPCs, minimum renovation</p>	<p>Partially</p> <p>Revision of EPBD - proposal for mandatory minimum energy performance standards</p> <p>Update the Energy Performance Certificates (EPC) framework (plan to introduce a stronger obligation to have EPCs)</p> <p>revision of EED: extend the renovation requirements to buildings at all public administration levels, plus extending energy audits requirements in order to maximise complementarity with EPCs.</p>

Type of barrier	Recommendation (EU, MS, LRA)	Mentioned in the RW
	<p>targets for public buildings, minimum energy efficiency requirements, standardisation of EPC across the MS)</p> <p>Use the revision of TEN-E Regulation to include building renovations as ‘projects of common interest’</p>	
Lack of holistic approach	<p>Consider life-cycle approaches, take into account the relationship between environmental, social and economic impacts (EU, MS, LRA)</p> <p>Take into account gender dimension related to building and renovating</p> <p>Provide solutions that have positive economic and social impacts (MS, LRA)</p>	<p>Yes</p> <p>construction system to be based on circular solutions, use and reuse of sustainable materials, and the integration of nature-based solutions (one of RWS lead actions)</p> <p>development of 2050 roadmap for reducing whole life-cycle carbon emissions in buildings pointed out</p> <p>Need to increase the presence and the role of women in the construction sector highlighted</p> <p>important role of social partners in implementation of the measures to upskill workers pointed out</p> <p>RWS ambitious on creating new green jobs, attracting and training specialists - weaker on social aspects of green jobs sectors such as quality of employment and the social protection, fair play aspects)</p> <p>importance of social enterprises in tackling energy poverty through socially innovative solutions, including energy awareness campaigns or retraining unemployed people underlined</p>

Type of barrier	Recommendation (EU, MS, LRA)	Mentioned in the RW
<p>Investment gap and high renovation costs</p> <p>Costs associated with project development, implementation and monitoring</p>	<p>Targeted EU funding for renovation projects</p> <p>Encourage private investment by providing clear technical information on renovation benefits (EPCs, building passports etc.)</p> <p>Aggregate projects to ensure economies of scale, increase appeal and access funding</p> <p>Use available funding solutions in combination and innovatively</p>	<p>Partially</p> <p>Funding options available but renovation -specific allocations lacking (e.g. RFF)</p> <p>Possibility to combine EU programmes and instruments, national funds and private funds for renovation projects envisaged</p> <p>Support from other EU programmes (InvestEU, the Connecting Europe Facility, LIFE, Horizon Europe, national funds) can already be combined with RRF</p> <p>strengthen the access to attractive private financing through the Renewed Sustainable Finance Strategy mentioned</p> <p>Introduction of Digital Building Logbooks integrating all building related data provided by the upcoming Building</p> <p>Renovation Passports, Smart Readiness Indicators, Level(s) and EPCs highlighted</p>
<p>Lack of technical capacity to design and implement policies (necessary for many elements such as creating a building inventory and decision making tools, performing cost-benefit analysis, identifying and designing financial</p>	<p>Mainstream technical support into EU instruments (EU)</p> <p>Provide regular training for administrative officials (MS, LRA)</p> <p>Forge relationships with local actors (LRA)</p>	<p>Yes</p> <p>Proposal to strengthen ELENA technical assistance facility and replicate it in national and local programmes</p> <p>Technical assistance window under the RFF highlighted</p>

Type of barrier	Recommendation (EU, MS, LRA)	Mentioned in the RW
mechanisms, developing and executing projects, engaging with citizens...)	Participate in cross-country initiatives and share good practices (LRA)	
<p>Lack of awareness among the public and the officials about the benefits of renovation and ways to access financial and technical support</p> <p>Lack of awareness among the sector professionals regarding the benefits of renovation, financial support available to them and latest technologies</p>	<p>Adopt one-stop-shops as standard practice (LRA)</p> <p>Lead by example with the renovation of public buildings and use them as ‘exhibits’(LRA)</p> <p>Support policy with communication campaigns targeting professionals (LRA)</p>	Partially

Methodological note on the selection of case studies presented in this study

In order to identify the case studies, a number of resources were scanned. These include best practice/good practice repositories of European Resource Efficiency Knowledge Centre, PlanUp EU, Fedarene, Publenef, City Invest-innovative financing models, Interreg Europe Good Practices Database (keyword search with ‘renovation’ and ‘retrofit’). EU Regiostar Awards were scanned for finalists for the 2014-2020 period to identify initiatives/projects related to renovation. Where filtering was possible, the most relevant themes such as renovation, buildings and energy efficiency were used. Furthermore, the documents reviewed for this study were also scanned for any mention of good practice examples at local or regional level. These resources were selected for scanning because they were identified through desk research during the study and considered the most relevant for the theme of renovation.

In order to make a final selection from the identified cases, the following criteria were employed to the best possible extent: geographical diversity, addressing different challenges identified in the previous sections and targeting private or public buildings.

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