



RENONBILL

EUROPEAN ON-BILL BUILDING RENOVATION ROADMAP



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CONTENTS

Executive summary	4
Introduction	6
1. Methodology	8
2. Barriers to the implementation of on-bill schemes	9
2.1 Homeowner related.....	9
2.2 Utility or financial institution related.....	10
2.3 Market related.....	11
3. EU regulatory framework	12
3.1 Energy performance of buildings directive.....	12
3.2 Energy efficiency directive.....	12
3.3 Renewable energy directive.....	13
3.4 Condominium (horizontal property) laws.....	13
3.5 Financial supervision framework.....	13
4. Solutions for the uptake of on-bill schemes	15
4.1 Minimum energy performance standards.....	15
4.2 Individual metering.....	16
4.3 Weaker consensus on renovation in multifamily buildings.....	17
4.4 Adjusted share in renovation costs and benefits.....	18
4.5 Energy bill history.....	19
4.6 Allowing utilities to act as lenders.....	19
4.7 National/municipal guarantee funds.....	19
4.8 Mortgage portfolio standards.....	21
4.9 Energy efficiency obligation schemes.....	21
4.10 Increasing competence of small utilities and renovation subcontractors.....	22
4.11 Establishing on-bill scheme support funds.....	22
4.12 Creation of on-bill tariffs.....	23
5. Policy roadmap	24
5.1 Policy recommendations.....	24
5.2 Implementation.....	28
6. References	30

EXECUTIVE SUMMARY

This report answers the need to establish a policy roadmap for maximising the uptake of on-bill schemes in the EU residential market. Building on the results of the RenOnBill research and innovation project, the report explains policy solutions applicable at EU and national level, with special focus on the first three years after the end of the RenOnBill project (2022–2025).

In brief, on-bill schemes use the utility bill as a repayment vehicle and bring different actors into a building renovation project. Certain features of on-bill schemes that are not easily found in other financing instruments can help strike a balance between the interests of different renovation participants and resolve barriers to energy renovation. In addition, due to their large-scale implementation potential, on-bill schemes can be a powerful tool for reaching EU decarbonisation goals.

The report starts by listing 11 potential barriers for on-bill uptake in the EU, grouping them by source – homeowner, utility/financial institution or market related. After introducing the regulatory framework, the report explains solutions for overcoming these barriers and eventually proposes a set of EU and national policy recommendations to make these solutions possible.

A brief overview of the policy recommendations is given below.

EU level



Inclusion of energy performance classes higher than E and F in new minimum energy performance standards



Obligatory installation of individual energy meters



Targeted use of available funding



Improved standards for investment portfolios



Strengthened energy efficiency obligation scheme

National level



Decreased share of votes in a multifamily building required for a positive renovation decision



Allowing distribution of costs and benefits between owners and tenants



Introducing energy bills as indicators of credit capacity



Cost-efficient use of financing



Renovation training programmes for small utilities and construction companies



Promoting clear on-bill project evaluation guidelines



Introducing measures supporting the transferability of on-bill arrangements

INTRODUCTION

On-bill schemes are important tools for involving the private sector in financing and implementing energy renovation of residential buildings. As a mechanism that relies on using the utility bill as a repayment vehicle, on-bill schemes are expected to resolve some important existing barriers to energy efficiency investments.

Based on the source of financing, there are two main on-bill scheme types:¹

On-bill financing

In on-bill financing scheme, the utility company secures the renovation investment from its own or public funds. The investment is then repaid by the end user through their utility bill.

On-bill repayment

On-bill repayment schemes are based on the involvement of a third-party institution that provides the investment and covers the capital expenditure. In this case the role of the utility is to serve as a repayment intermediary, collecting the repayments from the end user and transferring them to the financier.

On-bill schemes try to find a balance between the renovation costs and benefits as perceived by different building renovation actors. Once this balance is found, building renovation should run smoothly. Since it is possible to employ them at a large scale, on-bill mechanisms can have a very strong positive impact on EU renovation objectives and be a powerful tool for reaching EU decarbonisation goals. More information on on-bill schemes can be found in the [RenOnBill knowledge centre](#).

Due to different benefits they can provide, on-bill schemes have already gained the attention of EU policymakers who have included them in building renovation-related legislative files, such as the Energy Performance of Buildings Directive (EPBD) recast proposal from December 2021. However, more policy efforts are needed to secure and maximise the uptake of on-bill schemes in the EU. This is extremely important given the EU commitment to fighting climate change and related climate policy actions such as the adoption of the European Green Deal and a constant pursuit of reduced greenhouse gas emissions and increased energy efficiency.

Building on its research on on-bill schemes around the world and their potential in the EU market, the **RenOnBill project** (www.renonbill.eu) suggests some of the critical policy actions needed for maximising the uptake of on-bill schemes. The purpose of this paper is to present the European building renovation on-bill roadmap by **listing potential on-bill implementation barriers in the EU and proposing policy solutions**, with special focus on the first three years after the end of the RenOnBill project (2022–2025). The list of recommendations is organised by EU or national level and targets decision-makers from both groups.

¹ More details about on-bill schemes can be found in different [RenOnBill deliverables](#).

The document is structured in the following way:

Methodology

The methodology section lists the steps applied in our analysis. The result of these steps is the on-bill roadmap and the list of policy recommendations needed to resolve on-bill scheme obstacles. In addition, we explain some of the inputs used in the analysis, especially those related to defining on-bill barriers.



Barriers to implementation of on-bill schemes

This section lists some of the most important on-bill barriers, and especially those that could be resolved by proposed legislative updates.



EU regulatory framework

This section presents the legislative background and explains the main legislative documents and their link with on-bill schemes, as well as foreseen legislative updates.



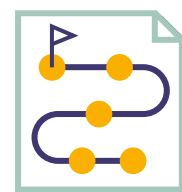
Solutions for the uptake of on-bill schemes

This section presents potential solutions needed to trigger and maximise the uptake of on-bill schemes in the EU. We explain each solution, how it resolves barriers previously defined, and the link with relevant legislation.

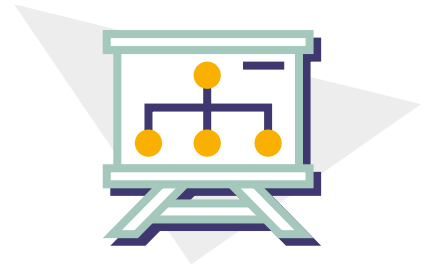


Policy roadmap

Concluding this report, the policy roadmap outlines potential policy recommendations and complementary measures for the uptake of on-bill schemes in the EU. Listed recommendations are applicable either at EU or at national level. The policy update timeline shows how these recommendations can be implemented in the first three years after the end of the RenOnBill project.



METHODOLOGY



We analysed the regulatory opportunities for the uptake of on-bill schemes in several steps described below.

Step 1. A brief overview of barriers to uptake of on-bill schemes in the EU. These barriers were carefully discussed throughout the RenOnBill project, through national stakeholder platforms and dialogues initiated with EU stakeholders.

Step 2. An overview of relevant EU regulatory frameworks, focusing on legislation with the potential to resolve the obstacles defined under Step 1. These legislative frameworks focused on building and energy performance related directives (EPBD, Energy Efficiency Directive (EED), and Renewable Energy Directive (RED)), but also included financial and condominium-related regulation.

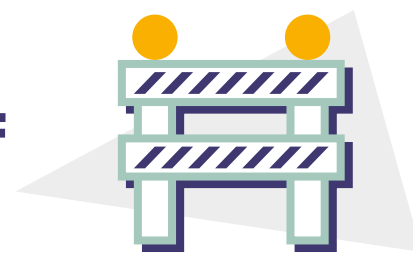
Step 3. We list potential solutions to different on-bill barriers. Proposed solutions could address several problems or barriers at the same time. Each solution is defined, linked to the barriers it could resolve, and linked to the specific regulatory framework.

Step 4. Building on a combination of steps 2 and 3, the report presents a list of policy recommendations to resolve key barriers and to maximise the uptake of on-bill schemes in EU. The recommendations address both EU and national decision-makers.

Step 5. The final step of the analysis is the evaluation and review of a timeline for on-bill related legislation. The timeline shows an overview of legislative review steps performed so far and planned for the coming months and years. A special focus is on the first three years following the end of the RenOnBill project.

2

BARRIERS TO THE IMPLEMENTATION OF ON-BILL SCHEMES



The following list contains a brief overview of some of the most important topics to be considered for the uptake of on-bill schemes in the EU. The list of barriers suggests existing regulatory framework components that may need special attention, and that should be updated, in order to maximise the uptake of on-bill schemes during the 2022–2025 period.

The list of barriers is organised by source – homeowners, utilities or financiers, and markets.

2.1 Homeowner related

Homeowner demand for energy renovations

The demand for residential energy renovations in a specific market is not always high enough to attract on-bill scheme project participants. In case of a modest demand, additional efforts may be needed to create enough interest among customers to trigger the implementation of on-bill schemes.

Fragmented decision-making in multifamily buildings

Complex decision-making in a residential building makes it difficult for a utility company to successfully negotiate the renovation deal. Decision-making can be especially complex in buildings where a large number of residents own their individual apartments but some parts of the building, such as gardens or corridors, are jointly owned. These problems are even more significant when different residents have different views on what the renovation investment should cover, how much it should cost, and how it should be financed.

Level of debt in a multifamily building

When financing energy renovation, the level of debt in a building may increase significantly. In addition to individual debt and responsibility, different residents may be responsible for another owner's default, potentially increasing individual debt and responsibility. Such high debt levels may be a significant obstacle for the uptake of on-bill schemes.

Customer credit capacity

Low credit capacity of homeowners, e.g. as a result of their low income, reduces their potential to raise funds and makes them equally unattractive for financing to both financial institutions and utilities. Despite potential energy savings that may be enough to repay the loan, a homeowner's low income (or another indicator of low credit capacity) may still signal a high risk of default. If present on a large scale, low credit capacity can significantly reduce uptake of on-bill schemes in a specific renovation market.

Split incentives for tenants and owners

Split incentives between an apartment owner and tenant take place when benefits and costs of energy renovation are unevenly distributed. In practice, owners tend not to invest in something that primarily benefits tenants, while tenants are not willing to invest in residential units they do not own.

2.2 Utility or financial institution related

Energy efficiency and sales conflict

Utility companies may easily find themselves in a conflict between energy efficiency and energy sales since investing in energy efficiency may significantly reduce their energy sales and worsen their financial performance. Although the level of exposure to this barrier may vary among different utilities (and utility types), a general rule is that companies involved in energy production will be affected more than energy retailers.

RenOnBill research has shown that this problem is mostly related to natural gas retailers, while electricity retailers can promote a fuel switch,¹ with increased electrification leading to increased demand.

Lending activity of utility companies

Credit activity is typically reserved for financial institutions that are able to fulfil a strict set of requirements and that are subject to significant control by national regulators. In order to be able to grant credits, a utility would have to follow a specific legal framework with different levels of strictness across the EU (as financial regulatory requirements take place at the Member State level).

Loan protection

Loan protection, or guarantee that the loan will be repaid, is one of the crucial topics for financing on-bill schemes, and for providing loans in general. Although it is a key ingredient of on-bill schemes in the US, the possibility to disconnect the end user from the energy supply grid in case of default on debt is not replicable in the EU.

¹ Such as from natural gas to electricity for heating (e.g., in heat pumps)

Low expertise of utilities and low availability of service providers

This barrier is related to the nature of the building renovation activities and how compatible they are with the core business of a utility. In-depth renovation measures, such as insulation of windows or the building envelope, may require partnering with other companies (energy service companies (ESCOs), installers, etc.). These partnerships may already exist, taking the form of collaboration agreements for certain categories of projects, or may be established where needed via commercial relationships between a utility and a selected group of providers.

When considering residential energy renovations and on-bill schemes, utilities may find that their departments are not well suited to the task. For instance, utilities may be able to implement certain types of renovations, such as boiler replacements or LED lighting. However, in-depth renovation measures, such as wall insulation or replacing windows, may require subcontracting. In these cases, availability of knowledgeable suppliers, such as ESCOs, construction companies, architects or engineers, may be crucial for on-bill uptake.

2.3 Market related

Low attractiveness of commercial loans

Financial institutions do not necessarily favour energy efficiency investments, and even if they do, financial products for building energy renovations and their terms may not be attractive enough for on-bill schemes. Examples here may include high interest rates, unattractive maturity, significant collateralisation requirements, or strict credit capacity requirements on homeowners.

Lack of on-bill scheme support instruments

Subsidies, tax breaks or other financial incentives provided to on-bill scheme participants will encourage renovations and on-bill uptake. This may be especially true when such incentives are designed to reduce capital expenditure and to significantly reduce the payback period. Lack of such support schemes could be an obstacle for the uptake of on-bill schemes, especially among low-income and vulnerable homeowners.

Difficult transferability of on-bill arrangements

Many homeowners are likely to want to either change their energy supplier or sell/rent their house before an on-bill investment has been repaid. Both of these changes will result in the problem of the transferability of the on-bill debt repayments. If the energy supplier is changed, on-bill repayments should still be made to the utility that originally provided the service. Where the house is sold or rented, the new owner/tenant should take care of paying the remaining instalments.



3

EU REGULATORY FRAMEWORK



3.1 Energy performance of buildings directive

The most relevant single legislative document for on-bill schemes is the Energy Performance of Buildings Directive (EPBD). The EPBD was enacted in 2002 and revised in 2010 and 2018. Currently, the EPBD is undergoing a major revision within the European Commission's "Fit for 55" package, which aims to revise all major files linked to the EU climate law to meet the EU's updated goal of reducing greenhouse gas emissions by at least 55% by 2030. On 15 December 2021, the Commission presented its proposal to recast the EPBD, which is now being discussed by the two co-legislators in the ordinary legislative procedure (European Parliament and Council), with a view to adopt the text in 2023.

Improving the rate of energy renovation plays a central role in the EPBD, in both its previous version and the Commission's new proposal. The new EPBD proposal follows the major focus areas of the Commission's communication on the Renovation Wave from October 2020. Financing incentives and market barriers present one of those areas. Compared to the current directive, the 2021 proposal lists many more concrete instruments which Member States could use to increase the rate and preferably also depth of renovation.

On-bill schemes and guarantee funds are only some of those options. Although they are only briefly mentioned in the 2021 EPBD proposal, it is positive to see them emerging there at all, given that there is no mention of either in the existing directive. Mortgage portfolio standards mark another novelty in the 2021 EPBD proposal. Although these primarily target financial institutions, if properly developed they could also be effective in on-bill schemes. Mortgage portfolio standards will oblige financial institutions to regularly declare that a certain fraction of their lending activities aligns with the decarbonisation objectives in the EU Green Deal. Renovation is one such objective and could therefore provide leverage on financial institutions to get much more involved in energy renovation lending.

3.2 Energy efficiency directive

The second important legislative file which might support the take-off of on-bill schemes is the Energy Efficiency Directive (EED). The EED was first enacted in 2012 and supersedes the Directive 2004/5/EC on promotion of cogeneration and the Directive 2006/32/EC on energy end-use efficiency and efficiency services. The EED also amends the Directive 2009/125/EC on Eco-design and the Directive 2010/30/EU on energy labelling. The latest amendment of the EED was enacted in 2018 through Directive (EU) 2018/844.

Like the EPBD, the EED is now in the process of major revision as part of the Commission's Fit for 55 package. The EED revision process began in July 2021 and is therefore in a more advanced stage than the EPBD recast. The major aspect of the EED which might positively affect the success of on-bill schemes is the upgrade of the energy savings obligation for Member States. For the period from 1 January 2021 to 31 December 2023, the EED would require Member States to achieve additional energy savings of 0.8% of annual final energy consumption. The requirement on energy savings will get even stronger from 1 January 2024 until 31 December 2030 when Member States would be required to lower their final energy consumption by 1.5% annually.

3.3 Renewable energy directive

The Renewable Energy Directive (EU) 2018/2001, usually referred to as RED II, is a recast of the Directive 2009/28/EC (RED I). RED II promotes the use of renewable energy in the EU and establishes a binding target of 32% renewables in EU final energy consumption in 2030. In addition, RED II requires Member States to calculate and use minimum levels of renewable energy in new buildings, as well as in buildings subject to major renovation.

During summer 2021, the Commission published a legislative proposal to revise RED II as part of the Fit for 55 package. The proposal strengthens existing provisions to set a new EU target of a 40% share of renewable energy in final energy consumption by 2030.

3.4 Condominium (horizontal property) laws

Rather than having concepts of property law, condominium laws are based on statutory laws. In most EU countries, the condominium concept consists of multiple components including individual ownership of an apartment and joint ownership of different property parts (land and common parts of the building). Apartment owners therefore have at the same time the ownership of their apartment and a share in ownership of the common property. On top of this, apartment owners may be a member of the homeowners association attached to the property they live in.

For this reason, condominium laws are usually connected to national laws on property and to the laws on associations. Since these are not directly linked to legislation relevant to energy renovation, condominium laws are not explained further in this report.

3.5 Financial supervision framework

The European system of financial supervision comprises the three European supervisory authorities, as well as the European Systemic Risk Board, the Joint Committee of the European supervisory authorities, the European Central Bank, and the Member States' competent supervisory authorities. While supervisory authorities remain in charge of

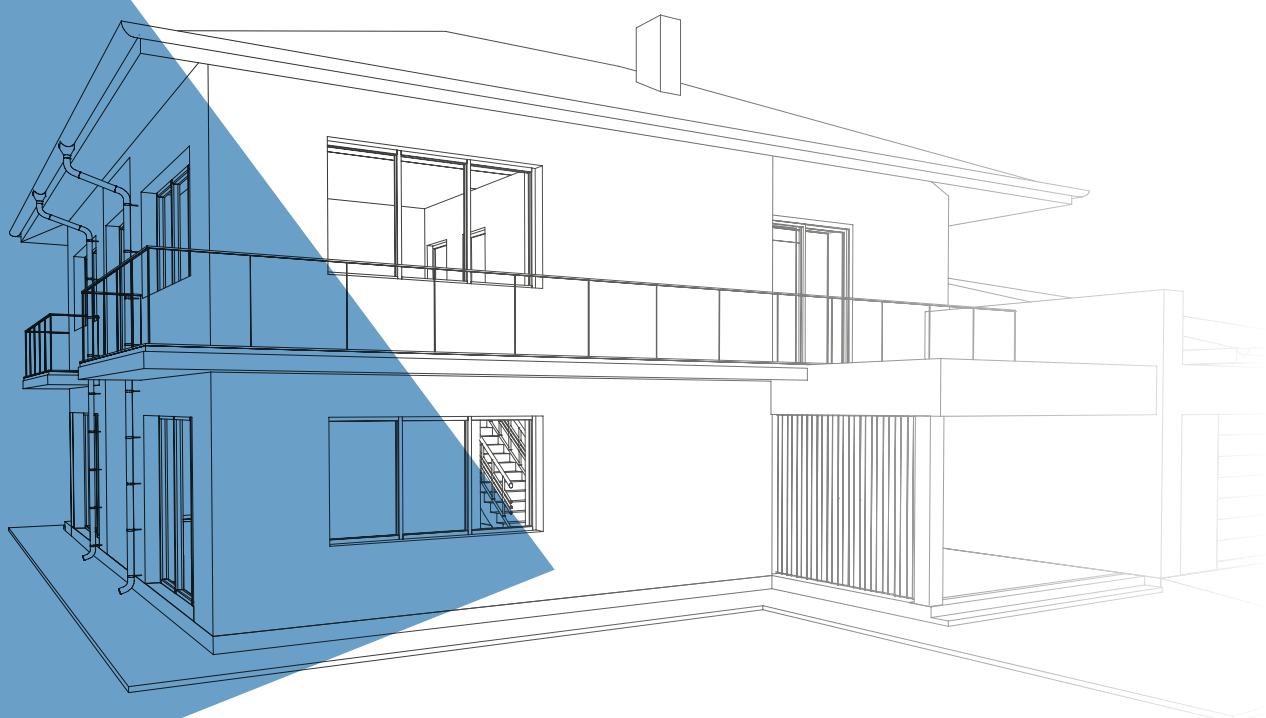
supervising individual financial institutions across EU jurisdictions, the three European supervisory authorities provide pan-EU regulation and harmonise supervisory practices by bringing uniform rules and common approaches across the bloc.

The European Banking Authority, as one of three European supervisory authorities, contributes, through the adoption of binding documents, to the creation of a single set of harmonised prudential rules for financial institutions throughout the EU, supporting a high level of protection to depositors, investors and consumers. Once technical standards drafted by European Banking Authority are adopted by the European Commission, they apply directly in all Member States and become part of their relevant national laws.

Among other EU directives, the European Banking Authority acts within the scope of Regulation (EU) No 575/2013 on prudential requirements for credit institutions, and within the Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms.

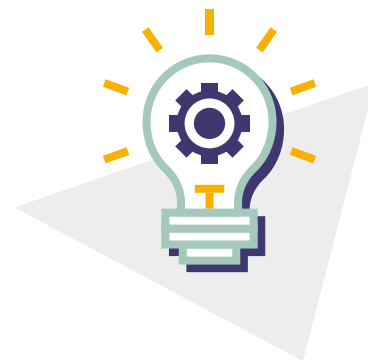
In addition to other rules, these and other legislative documents set rules for:

- **Definition of a credit institution**, meaning a business that takes deposits or other repayable funds from the public and grant credits for its own account
- **Requirements for access to the activity of credit institutions**, stipulating that the competent authorities refuse authorisation to commence the activity of a credit institution where a credit institution does not hold separate own funds or where its initial capital is less than €5 million
- **Credit institution supervision**
- **Approaches to credit risk** measurement and risk quantification.



4

SOLUTIONS FOR THE UPTAKE OF ON-BILL SCHEMES



4.1 Minimum energy performance standards

The 2021 EPBD proposal defines minimum energy performance standards as “rules that require existing buildings to meet an energy performance requirement as part of a wide renovation plan for a building stock or at a trigger point on the market (sale or rent), in a period of time or by a specific date, thereby triggering renovation of existing buildings.”¹ Minimum energy performance standards are one of the most discussed elements in the 2021 EPBD recast. Based on the Commission’s proposal from December 2021, minimum energy performance standards would start with targeting only the buildings in energy performance class G, which represent the worst-performing 15% of national building stock in every Member State. While the public and non-residential sector will need to renovate their G class buildings to class F by 2027 and to class E by 2030, the residential sector is allowed to have a short delay and meet the same targets by 2030 and 2033, respectively. The final nature of minimum energy performance standards will be known only after the negotiations between the European institutions in the course of 2022 and 2023.

Minimum energy performance standards have potential to dramatically **increase demand for energy renovation** across both public and private sectors. Member States will also be pushed to put forward financial incentives in order to meet their EPBD renovation targets by the end of this decade.

The introduction and gradual tightening of minimum energy performance standards is generally regarded as one of the most effective regulatory mechanisms for resolving **split incentives between tenants and owners**. The main strength of minimum energy performance standards is the fact that they systematically target the entire stock of buildings and require energy performance upgrades regardless of the structure of ownership of the building unit. Minimum energy performance standards represent a “top-down” approach to dealing with renovation barriers, such as split incentives. By mandating the renovation of worst-performing buildings, minimum energy performance standards could replace split incentives with a clearly stated market signal with a well-defined roadmap.

¹ <https://ec.europa.eu/energy/sites/default/files/proposal-recast-energy-performance-buildings-directive.pdf>

4.2 Individual metering

Contrary to central building metering that measures the energy consumption of a building, individual metering attaches an energy meter to a single living unit, such as a single-family home or an apartment in a multifamily building. Individual metering provides the most accurate measurement of energy and supports accurate billing and allocations of energy to individual users, which can make a significant difference in multifamily buildings.

As a general rule, increased accuracy in energy metering is expected to increase the incentives to save energy and manage post-renovation energy consumption in both single-family and multifamily buildings. This is mostly because such meters allow individual management of energy use and valuable energy consumption feedback. In addition, they increase the transparency of energy consumption, making end users more responsible and more interested in energy renovation.

Individual meters are expected to increase homeowner demand for energy renovations since they can provide detailed monitoring of energy consumption before and after the renovation. Before the renovation, individual meters allow for a more accurate analysis of potential energy efficiency upgrades. On top of that, information on real post-renovation energy consumption makes end users sure of achieved savings. They may be allowed to manage such savings to reach their desired level, which may be important when energy savings are used to repay the investment through monthly loan instalments.

Individual meters could be a powerful tool for overcoming **split incentives for tenants and owners**, allowing accurate calculation and distribution of energy renovation costs and benefits. For instance, landlord and tenant could agree on indoor conditions to be maintained and then react if these are not met – tenants being compensated if they consume less or bearing the energy costs if they consume more than agreed. Transparent and fairly distributed monetary results of energy renovation and management, especially if supported by smart metering, could be a strong tool for resolving owner-tenant dilemmas.



The objective of Member States to enable submetering in multiapartment buildings with a central heating or central cooling source was mentioned in a 2018 version of the EED (Article 9b) and remained unchanged with the 2021 proposal of the revision of the EED (the text of the provision remained the same, only the number of the article changed to Article 14). According to Article 9b of the 2018 EED, public authorities should ensure the installation of individual meters for each building unit in a multiapartment building, where technically feasible and cost-effective in relation to the potential energy savings.

4.3 Weaker consensus on renovation in multifamily buildings

Reaching consensus on energy renovation in multifamily buildings can be a significant obstacle to investment. This is especially true where there is low awareness about the renovation costs and benefits or different expectations among residents. Decision making based on a flexible consensus may then prevent one or few residents compromising the energy improvements.

For these reasons, on-bill scheme (or other renovation-related) decision-making would benefit from reducing the share of positive votes required in a multifamily building. For example, the share of positive votes required could be reduced from two-thirds to 50%+1 (or even further, depending on Member State rules). This would help resolve **fragmented decision-making in multifamily buildings** by speeding up the decision-making process. It could also attract utilities and/or financial institutions to approach new markets and offer new products, offering a higher chance of success for their marketing and awareness-raising campaigns.

Any reduction in required majority could, however, have a negative impact on vulnerable residents since they would have less chance to oppose investment decisions. To overcome this effect, each reduction in required majority should be accompanied with measures to protect low-income or other exposed resident groups.

The problem of fragmented decision-making in multiapartment buildings is highlighted in the 2021 EBPD recast proposal. The Commission encourages Member States to adopt appropriate regulatory measures to remove non-economic barriers to building renovation, which may include removing unanimity or lowering the requirements of a two-thirds majority or other models of absolute majority which might restrict the effectiveness of decision-making in co-ownership structures (EBPD Article 15). The Commission also recommends allowing co-ownership structures to be direct recipients of financial support.

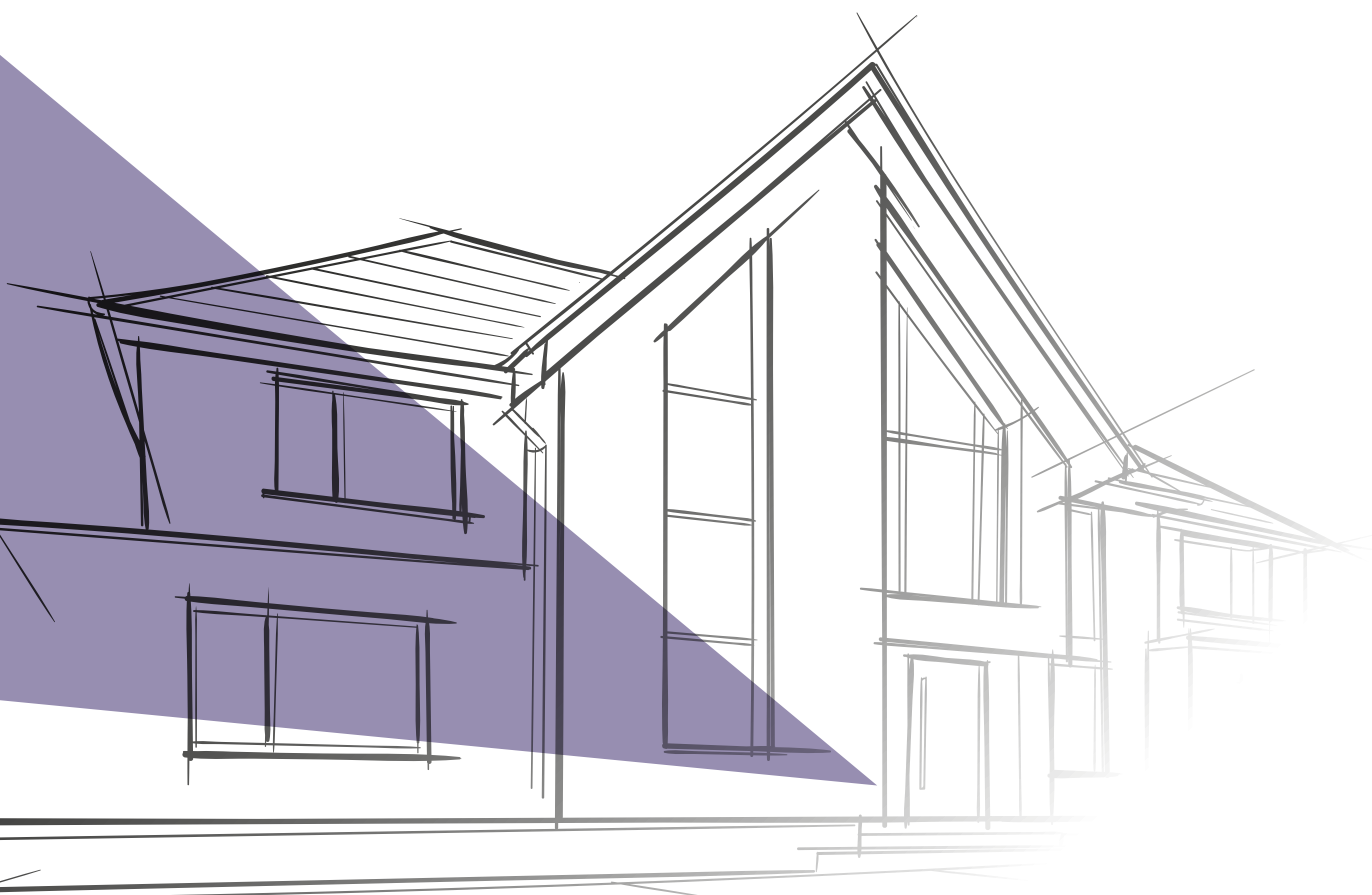
Member States are already encouraged to simplify administrative procedures regulating decision-making processes in multiapartment buildings (EED Article 19). However, as with other ownership-related issues, the Commission does not have direct competences in this regard; any measures need to be decided at national level.

4.4 Adjusted share in renovation costs and benefits

Renovation costs and benefits – both capital expenditure and operating costs, as well as monetary savings as a result of reduced energy demand – could be more fairly distributed between the owner and the tenant. While tenants' participation in capital expenditure may be seen as unreasonable, they could participate in renovation costs by passing a portion of monetary savings to the owner responsible for repaying the loan used to finance the capital expenditure.

Fair distribution of renovation costs and benefits would be expected to diminish the effect of **split incentives for tenants and owners** and serve as an enabling factor for the uptake of on-bill schemes. Rather than leading to increased rents, a fair distribution of renovation costs and benefits could be achieved through a pre-renovation agreement between owner and tenant specifying the monetary savings to be passed to the owner and their link with the outdoor conditions and real energy use within the apartment. A utility company, as an on-bill scheme provider, could use its expertise to design such an agreement and support owners and tenants in its implementation, e.g., by providing customer support and resolving potential disputes once it is in place.

The issue of split incentives was already addressed in the EED (Article 19) and continues to play an important role in the EED recast proposal (Article 21). The EED encourages Member States to take necessary measures to remove barriers to energy efficiency, such as the split incentive between owners and tenants. These actions may include repealing or amending legal or regulatory provisions or adopting guidelines and simplifying procedures regulating decision-making in rented or multi-owner properties.



4.5 Energy bill history

For each of its existing customers, a utility company is in possession of a detailed energy bill repayment history. Similar to loan repayment, energy bills may be either settled in full or with delays and/or reduced monthly payments. Analysis of past energy bill payments could provide the utility with an insight into a customer's energy bill servicing practice, which they can use in assessing the customer's credit risk profile regarding potential loan repayment.

Using utility bill repayment history as a proxy of the resident's credit capacity could help resolve the issue of **customer credit capacity**. Depending on how it is used – either added to the existing credit assessment models used by utilities and financial institutions or used alone to accompany the loan approval process – bill repayment history could serve as an extra indicator providing more accurate risk profiles of customers. A positive bill repayment history, such as timely and full settlement of utility bills, would be expected to result in improved customer credit capacity and reduce risks perceived by financiers.

4.6 Allowing utilities to act as lenders

Regulation (EU) No 575/2013 on prudential requirements for credit institutions defines the business of a "credit institution" as "...to take deposits or other repayable funds from the public and to grant credits for its own account". To qualify as a credit institution, a company must comply with both prerequisites – taking deposits or other repayable funds and granting credit for its own account. While a deposit is defined as sum of money received repayable on demand or at agreed point in time, other repayable funds may include bonds and other comparable securities continually issued by the credit institution. [1]

Allowing **utilities to get involved in lending activities** is a prerequisite for making on-bill schemes possible and allowing utilities to provide the initial investment in the form of a loan repaid by the end user. This is a question of financial regulations. EU financial regulations set the requirements for credit institutions, while national regulators give consent.

4.7 National/municipal guarantee funds

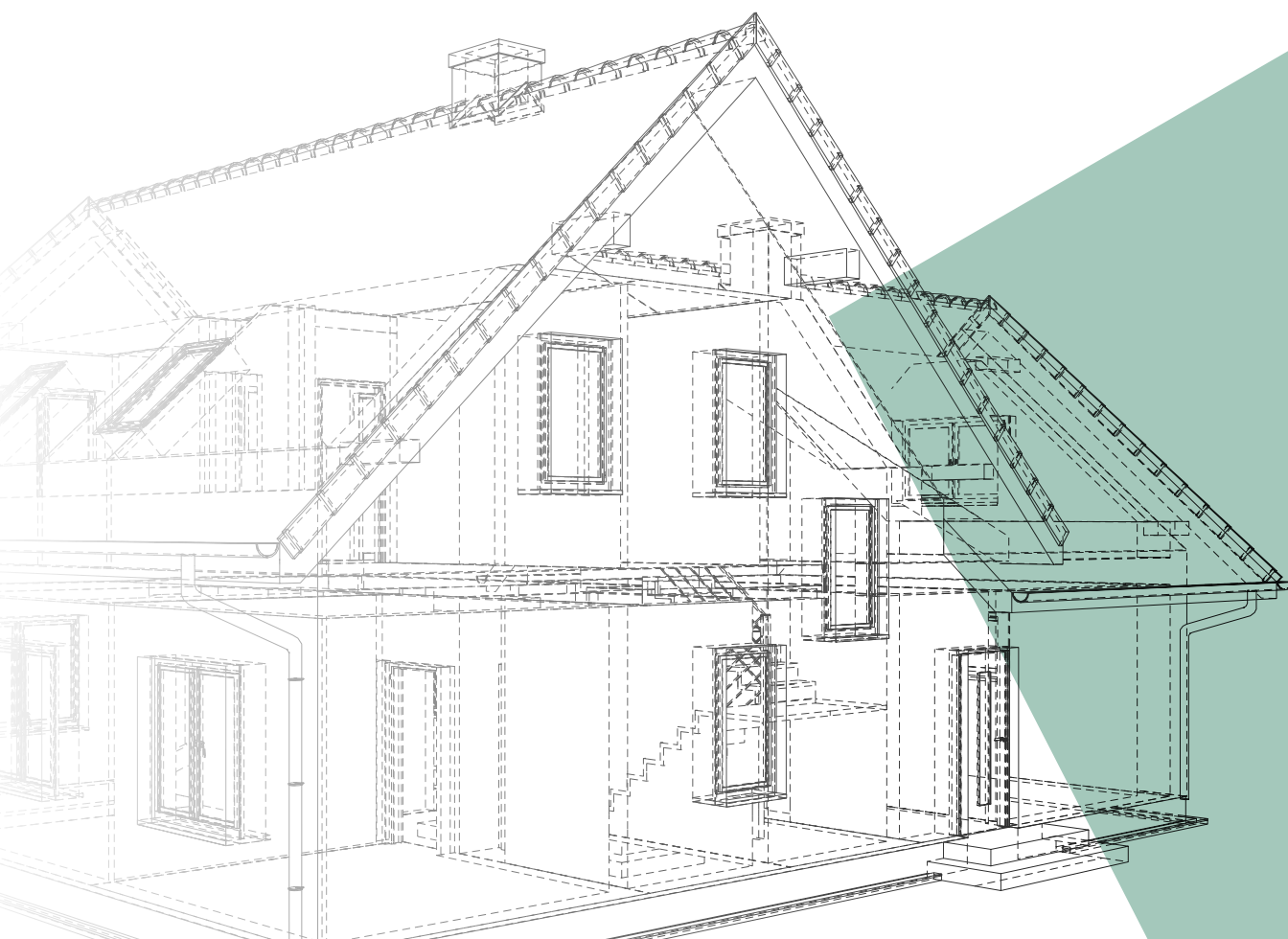
Where energy renovation loans are expensive or unavailable, local authorities can facilitate homeowners' access to finance by establishing guarantee funds that support renovation lending provided by banks. Typically, these funds would make it easier for homeowners with high risk of loan default to approach banks and obtain necessary loans.

In practice, a national or municipal authority could establish a guarantee fund that would be activated by the lender in case a homeowner defaults on their loan. These funds can be financed from different sources, such as revenues from the emissions trading system (ETS), local environmental taxes or green municipal bonds, to name a few.

Energy renovation guarantee funds would be an effective tool for resolving different on-bill barriers, such as the issues of **loan protection** and **low attractiveness of commercial loans**. Guarantee funds reduce the investment risk perceived by lenders, which would result in lower interest, better loan attractiveness and, eventually, higher investments. Examples show that the resources used by national/local authorities to back up the guarantee funds are not high. In an example from Brussels Capital Region, the fund size equalled around 2% of the total amount of loans approved. [2]

Member States should not have significant problems in establishing a national fund that would guarantee the repayment of loans for renovation. For instance, the Commission encourages Member States to use their current ETS revenues to support the green transition and support low-income families to cope with the upcoming increase in energy prices. In a similar way, Member States are encouraged to direct their ETS revenues towards renovation support and other energy-efficient improvements. [3]

The Commission has proposed extending the ETS to buildings and transport, and establishing a Social Climate Fund that would use 25% of these additional revenues for supporting low-income households during the climate transition. These proposals are still relatively recent and it is hard to predict in what form they will pass negotiations between the European Parliament and Council. In this sense, it would be worth examining if, on top of other sources, ETS revenues could be used to fund a national building renovation guarantee fund. Although there is much uncertainty even around the establishment of the Social Climate Fund itself, one of the provisions (Article 6) stipulates that the revenues from such a fund might support building renovations, especially for those occupying the worst-performing buildings. This could include financial support or fiscal incentives such as deductibility of renovation costs from the rent, independently of the ownership of the buildings concerned.



4.8 Mortgage portfolio standards

A mortgage portfolio standard is a proposed regulatory mechanism for encouraging financial institutions to provide mortgages for building with increased energy efficiency. In this way, mortgage portfolios owned by banks would have to meet specific targets aligned with the Paris Agreement. [4]

Mortgage portfolio standards could resolve the **low attractiveness of commercial loans** Low attractiveness of commercial loans and support financial institutions in directing a part of their lending activities into energy improvements and building renovations.

One of the strengths of on-bill schemes is that they bring cooperation between utilities and financial institutions, which may be mutually beneficial and significantly support an uptake of mortgage portfolio standards. Utilities could use their knowledge and demand aggregation power to support financial institutions to implement mortgage portfolio standards. For instance, when performing market research and initial screening of potential investments, utilities could keep the objective of mortgage portfolio standards in mind and in this way support banks to “green” their mortgage activities. Equally, mortgage portfolio standards may result in stable and systemic financing for utilities and their on-bill schemes focusing on increased energy performance in line with the Paris Agreement.

Mortgage portfolio standards are a relatively new term in the European context although very much aligned with efforts aimed at promoting green lending and green bonds. Mortgage portfolio standards were included in the 2021 proposed EPBD recast (Article 15).

4.9 Energy efficiency obligation schemes

Obligated parties are defined by the Energy Efficiency Directive as energy distributors and retail energy sales companies or transmission system operators designated by Member States and bound by national energy efficiency obligation schemes.

Member States may require obligated parties to achieve a share of their energy savings obligation among vulnerable customers and people affected by energy poverty. Member States must encourage obligated parties to carry out actions such as renovation of buildings and provision of financial or other incentives for energy efficiency improvements in conformity with national financing and support schemes. In addition, obligated parties must report annually on the energy savings achieved via actions promoted within the energy-poor segments of the population.

The concept of energy efficiency obligation schemes could help resolve the **energy efficiency and sales conflict**, though this would be an authoritative, top-down approach.

In parallel to minimum energy performance standards that would require renovation of the worst-performing buildings, energy efficiency obligation schemes could obligate energy

providers to invest their resources in energy renovation on behalf of vulnerable customers and contribute to national energy savings, in spite of the cost to their own profits.

It needs to be considered, though, that after reducing the energy consumption of their end users, energy providers tend to raise the price of the energy supplied. Paradoxically then, the customers who do not undertake energy renovation may eventually pay a higher price for the same amount of energy consumption, while subsidising the utility's investment in reducing the energy consumption of vulnerable customers. [5]

The functioning of energy efficiency obligation schemes is well described in Article 7a of the 2018 EED and further elaborated in Article 9 of the proposed EED revision.

4.10 Increasing competence of small utilities and renovation subcontractors

Different training and knowledge sharing programmes designed and implemented by national governments could be used to tackle potentially **low expertise of utilities and low availability of service providers**, especially related to deep renovation measures. Once successfully executed, these programmes would be expected to increase the skills of project participants needed for designing and implementing window replacement, wall insulation, installation and commissioning of energy systems, to name a few.

Both the EPBD and the Renovation Wave encourage Member States to invest in training and upskilling of their construction workforce, which could be an important push for national or regional governments to increase the competence of on-bill project participants.

4.11 Establishing on-bill scheme support funds

On top of political support, on-bill schemes could receive significant financial support from national or local levels. Governments could decide to establish new funds, that would be devoted to investing in climate and energy projects. In contrast to guarantee funds oriented to banks (trying to reduce the level of risk they perceive), these funds could focus on end users, for example by reducing their level of debt or the interest rates they have to pay.

For example, environmental taxes on electricity consumption or green bonds could be used to secure the funds earmarked for supporting national or local on-bill schemes. Another important source of funding could be EU funds available for energy renovation, including funding from the Recovery and Resilience Facility, ETS revenues or the recently proposed Social Climate Fund.

Once such funds are established or revenues earmarked, governments could provide grants to end users and reduce the initial costs of the project. In this way, end users would need to borrow less, which would improve **customer credit capacity** and reduce the **level of debt in a multifamily building**. At the same time, addressing the **lack of on-bill scheme**

support instruments will generally improve the uptake of on-bill schemes. Another way of using support funds by providing low-cost energy efficiency loans that would potentially resolve the obstacle of **low attractiveness of commercial loans**.

One example of an EU fund that could be used for this purpose is [NextGenerationEU](#), a temporary European Commission recovery instrument, and the Recovery and Resilience Facility, one of its components. Most EU countries have already prepared and submitted their recovery and resilience plans, committing to a green transition and counting on using between 5% and 15% of the Recovery and Resilience Facility grants for renovation of buildings.

Another link with the existing regulation can be found in the EPBD proposal where the Commission pays special attention to using financial incentives and resolving market barriers (Article 15). Here, the Commission proposes that Member States should “make best cost-effective use of national financing and financing available established at Union level” and “promote the roll-out of enabling funding and financial tools, such as energy efficiency loans.”

4.12 Creation of on-bill tariffs

The creation, by national energy market regulators and national governments, of an “on-bill tariff” could help in setting up more effective on-bill schemes, allowing improved transferability of repayment contracts between end users and energy suppliers. Such on-bill tariffs should be associated with the meter or linked to the end user’s point of delivery, i.e., the physical point where the meter measuring the energy supply to the dwelling or building is located.

Based on current national energy market regulations, several tariffs and fees are embedded in energy supply invoices. For instance, distribution system operators are remunerated for ensuring the correct operational conditions of the network by collecting network tariffs paid by end users on their energy bills.

Provided on-bill tariffs are set up when an on-bill scheme is initiated between a utility and an end user, the repayments can be incorporated in the utility’s invoice as an on-bill tariff. Later, if the end user decides to change their utility supplier, the on-bill tariffs would allow a swift transfer of on-bill repayment fees to the original utility.

Under a contract with a different energy supplier, the repayments for on-bill services are still paid by the end user via the on-bill tariff. These tariffs are then collected by a designated entity (e.g. the distribution system operator responsible for the area or a different national organisation) that transfers them to the utility which originally realised the renovation investment.

On-bill tariffs, if they are linked to the meter corresponding to the point of delivery, could also allow for swift transfer of on-bill arrangements when the dwelling is sold to a new owner or, for rented dwellings, when the tenant changes. The newcomer enjoying the benefits of the building renovation will, unless they have made different arrangements with the (previous) owner, continue paying the on-bill tariffs associated with its meter until the repayment is completed. They will also be able to change energy supplier if desired.

5

POLICY ROADMAP



Building on the analysis of potential solutions to on-bill barriers, this section presents a set of policy recommendations and complementary measures for the uptake of on-bill schemes in the EU. The recommendations presented below are applicable at either EU or Member State levels.

5.1 Policy recommendations

EU level

Including energy performance classes higher than E and F in minimum energy performance standards

Minimum energy performance standards can be a powerful tool to increase demand for energy renovation and to promote the uptake of on-bill schemes. Building on the current EPBD proposal (focusing only on F and G classes of energy performance certificates), a further increase in energy renovation demand and stronger focus on deep renovation could be achieved by **including classes higher than F and G in minimum energy performance standards.**



Obligatory installation of individual energy meters

Although individual energy metering was not updated in the proposed EED revision, more attention could be given to this issue. For the time being, the EED asks public authorities to ensure installation of individual meters in multiapartment buildings where it is technically feasible and cost-effective. However, an updated EED could ask for **obligatory installation of individual meters** in multifamily buildings while public funds should be used to overcome potential technical and cost-related barriers.



Targeted use of available funding

Financing available at EU level, such as the Recovery and Resilience Facility, the Social Climate Fund, revenues linked to the ETS, and other public funding sources should be used wisely to support on-bill schemes in EU Member States. For instance, Member States could be required to **allocate a specific portion of financing from EU funds to building renovation** and also report on the renovation impacts achieved by investing in on-bill schemes or other building renovation programmes. This approach could help to **establish national on-bill and/or guarantee funds** used exclusively for supporting on-bill schemes at national or regional level.



Improved standards for investment portfolios

EU policymakers should **require financial institutions and investors to invest in energy efficient portfolios**. For instance, energy renovation loans approved by a commercial bank could be treated by national regulators as less risky (allowing lower capital requirements) if they result in buildings achieving a certain energy class. Similar ideas have already been introduced with the mortgage portfolio standards suggested in the EPBD recast (2021), and this could also complement the proposal on stricter minimum energy performance standards above.



Strengthened energy efficiency obligation schemes

The energy efficiency obligation scheme is a part of the EED and has been significantly updated in its revision from July 2021. To support on-bill schemes and building renovation in general, an updated EED could also **strengthen energy efficiency obligation schemes further** by establishing clear energy renovation requirements that should be achieved by obligated parties within a specific time frame.



Rather than focusing on vulnerable customers, such requirements should be applied to the entire building stock, while obligatory monitoring and reporting of the results should be included as well. In addition, energy efficiency obligation scheme implementation must be coordinated with (national) regulation on regulated or non-regulated tariffs.

National level

Decreased share of votes in a multifamily building required for a positive renovation decision

To support decision-making in multifamily buildings, national governments could update their horizontal property laws and **reduce the share of votes in a multifamily building required for a positive energy renovation decision**. Current majority rules differ across EU countries but, for example, could be changed from two-thirds to 50%+1, or from 50%+1 to a lower share. In all cases, special care should be paid to the rights of vulnerable residents.



Allowing distribution of costs and benefits between owners and tenants

Although the EED encourages Member States to remove energy renovation barriers, such as owner-tenant split incentives, more action may be needed to resolve this obstacle. National governments could, where applicable, **legally support owner-tenant agreements dealing with distribution of costs and benefits after the renovation**. Such agreements could distribute anticipated benefits (monetary savings) between owners and tenants based on an estimated link between the indoor and outdoor conditions and energy savings.



Introducing energy bills as indicators of credit capacity

Energy bill payment history could be used as a potential instrument for a more accurate credit assessment of homeowners applying to on-bill schemes. While the EU financial supervision framework asks and provides guidelines for the assessment and treatment of risks, national regulators could **pay more attention to energy bill history and support its inclusion in credit risk models** used by banks and utilities.



Cost-efficient use of financing

When supporting renovation, and especially **when financing is obtained from EU funding sources, national governments should ensure a high level of energy savings**. Metrics describing energy savings achieved, or private capital mobilised, per Euro used from EU funds could be established and monitored. After collecting enough data, such metrics could, for instance, determine level of grants to maximise private capital involvement and guide design of cost-efficient investment programmes, including on-bill schemes.



Renovation training programmes for small utilities and construction companies

Promoting building renovation skills, and especially those related to deep renovation, among small utility companies is crucial for the uptake of on-bill schemes. To support this cause, national governments could **establish training programmes to help utilities and construction companies deliver high-quality renovations and develop their building renovation expertise**. Training could be customised to the needs of different utilities and construction companies and focus on different topics, such as building energy performance standards, on-site renewable energy systems, or use of advanced materials.



Promoting clear on-bill project evaluation guidelines

In addition to renovation trainings, national governments could **develop and promote on-bill investment evaluation guidelines** among different on-bill scheme participants. These guidelines could be based on widely accepted investment analysis approaches, such as the discounted cash flow method, and customised to on-bill scheme participants and their level of expertise and project expectations.



Introduce measures supporting the transferability of on-bill scheme arrangements

As with other tariffs and fees that are customarily embedded in energy invoices, national governments and energy market regulators could create on-bill tariffs associated to the energy meter and point of delivery. These tariffs would allow for simplified transfer of on-bill contracts and repayments when customers change energy supplier or the dwelling is sold or rented during an ongoing on-bill contract.



5.2 Implementation

This section explains how some of the recommendations listed under 5.1 can be implemented.

For this purpose, future changes in the EPBD, EED and RED are explained in the table below. The table shows a timeline of evaluation and review for these three directives, as well as timing of some complementary measures, focusing on the first three years following the end of the RenOnBill project.

To reflect better on the ongoing revision of the three directives, the table also shows steps that preceded the development of European Commission proposals on the EPBD, EED and RED.

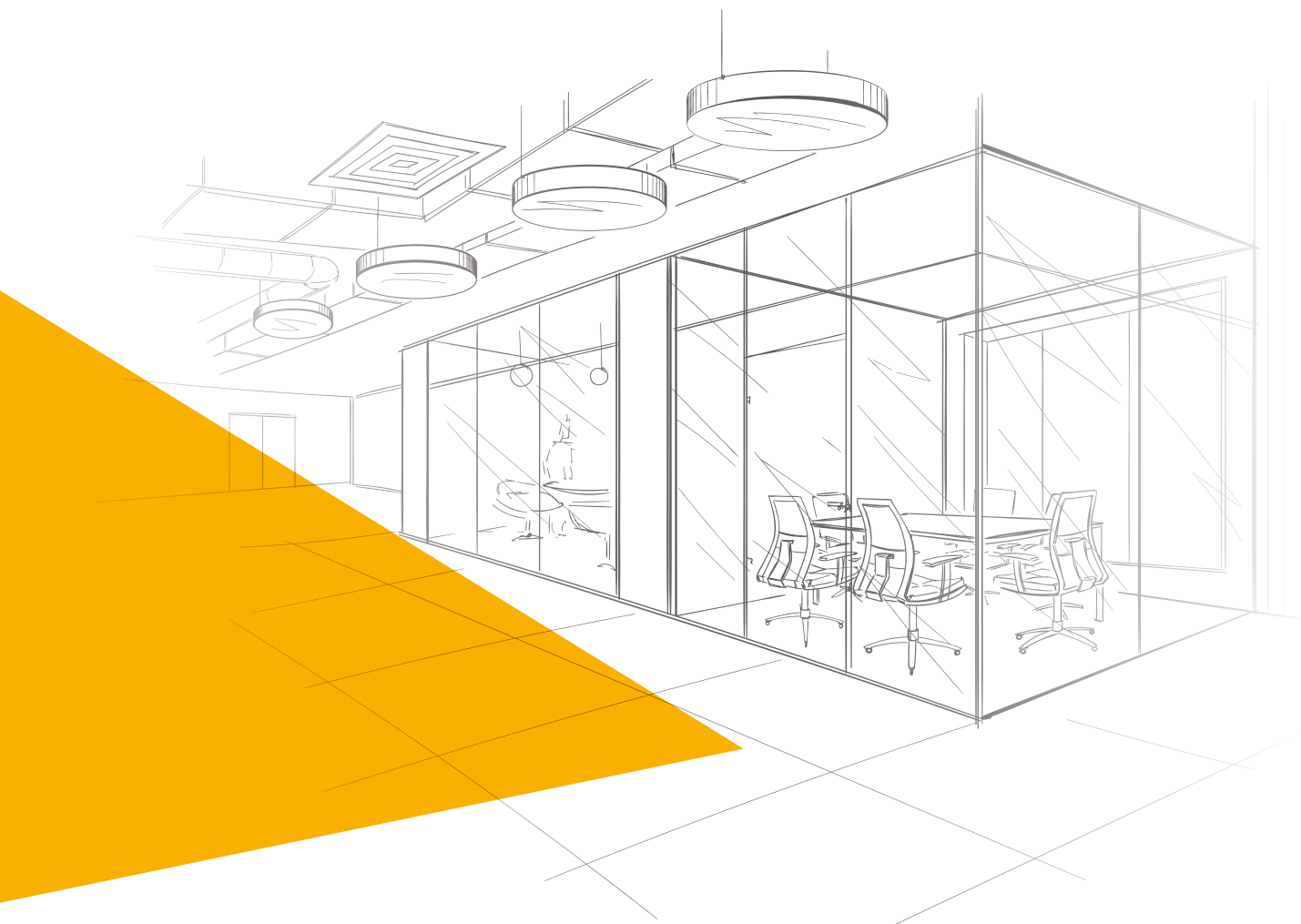


Table 1: Evaluation and review timeline for different directives

	Energy Performance of Buildings Directive (EPBD)	Energy Efficiency Directive (EED)	Renewable Energy Directive (RED)
Q3 2020		Roadmap	Roadmap
Q4 2020			Public consultation
Q1 2021	Roadmap	Public consultation	Public consultation
Q2 2021	Public consultation		
Q3 2021		Commission published EED proposal	Commission published RED proposal
Q4 2021	Commission published EPBD proposal	EED proposal discussed in EU Council & Parliament	RED proposal discussed in EU Council & Parliament
Q1 2022	EPBD proposal presented to European Parliament's Committee on Industry, Research and Energy (ITRE)	ITRE Parliamentary Committee issued EED draft report	ITRE Parliamentary Committee issued RED draft report
Q4 2023	EU framework for voluntary renovation passports introduced		
Q2 2024	Member States submit national building renovation plans	Member States submit statistics on national electricity and heat production	
Q4 2024			Latest date for transposition of RED in Member States
Q2 2025		Member States submit statistics on national electricity and heat production	
Q4 2025	Energy performance certificates must be harmonised	Commission evaluates existing measures	



6

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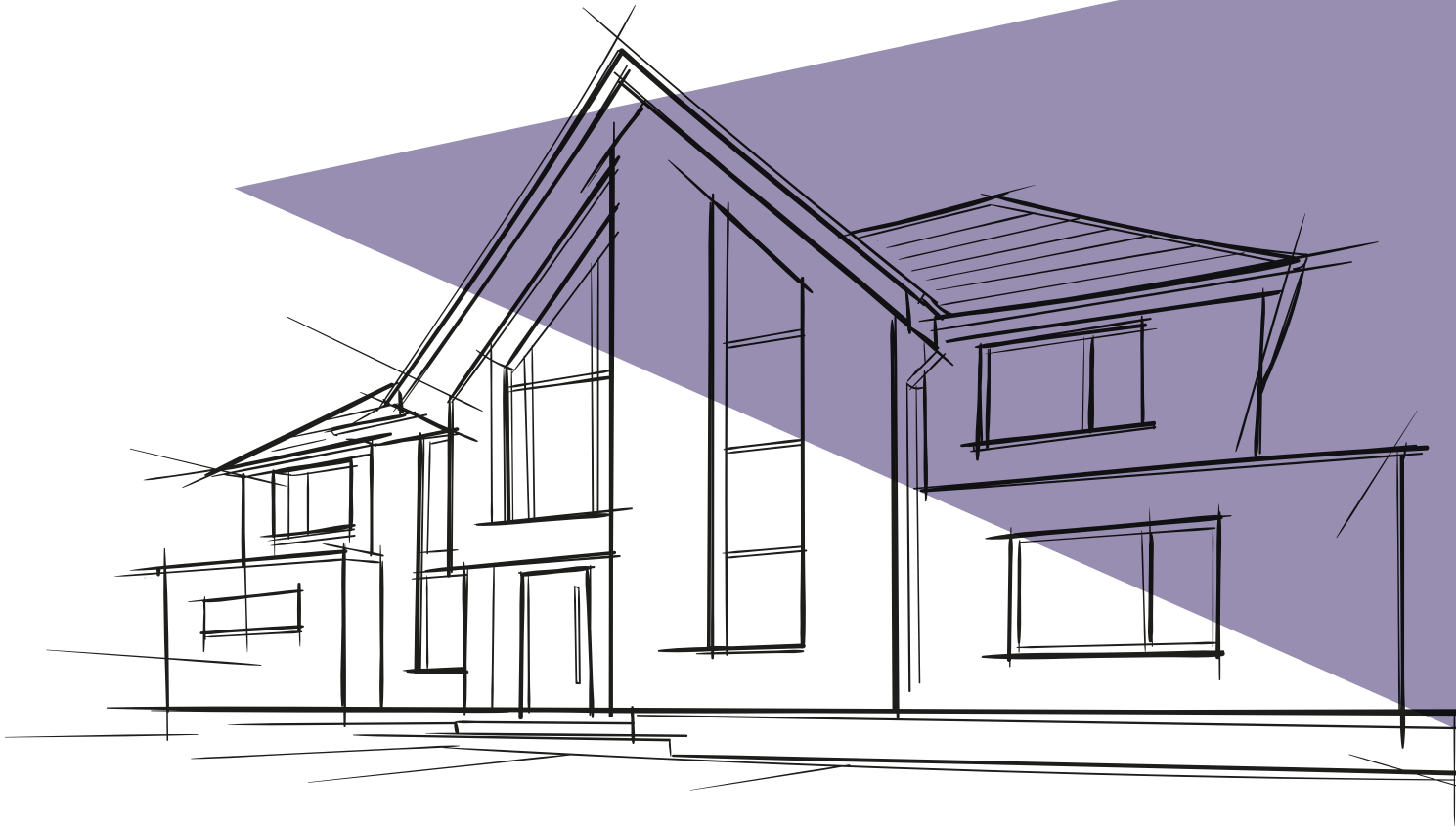
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