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FINANCING ENERGY RENOVATION IN BUILDINGS

Guidance on financial schemes with a focus on Bulgaria and Romania



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Introduction

The Clean Energy for all Europeans policy package led to the revision of the EU Energy Performance of Buildings Directive (EPBD) ([Directive \(EU\) 2018/844](#)). The amended directive now sets a clear direction for the full decarbonisation of the European building stock by 2050. It further requires national governments to establish “long-term renovation strategies for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private”. All Member States must provide their new long-term renovations strategy (LTRS) to the European Commission by 10 March 2020.

As a crucial part of the LTRS, Member States are to support the mobilisation of investments into the renovation required to achieve the goals set by the directive. Access to financial resources by public and private funding must be ensured on all levels, as stated in paragraph 3 of the Article 2a of the revised EPBD.

EPBD [2018/844]

Article 2a

3. To support the mobilisation of investments into the renovation needed to achieve the goals referred to in paragraph 1, Member States shall facilitate access to appropriate mechanisms for:

- (a) the aggregation of projects, including by investment platforms or groups, and by consortia of small and medium-sized enterprises, to enable investor access as well as packaged solutions for potential clients;
- (b) the reduction of the perceived risk of energy efficiency operations for investors and the private sector;
- (c) the use of public funding to leverage additional private-sector investment or address specific market failures;
- (d) guiding investments into an energy efficient public building stock, in line with Eurostat guidance; and
- (e) accessible and transparent advisory tools, such as one-stop-shops for consumers and energy advisory services, on relevant energy efficiency renovations and financing instruments.

About this guide

This guide provides information and inspiration for public officers at the national and municipal level as well as private investors and homeowners about effective financing schemes and innovative financial instruments. It accompanies the [EPBD Guidance for Public Officers](#) [1], which spells out the process of how to set up a renovation strategy with a focus on Romania and Bulgaria. It also complements the template for developing a national LTRS, which is meant to support national governments to set up

their strategy according to current legal provisions. Updates and new publications can be found on the Our Buildings [project website](#).¹

Investment in energy efficiency of buildings is key to meeting the objectives of the Energy Union and supporting the transition to a decarbonised building stock. More efficient buildings bring benefits for all European citizens and companies in terms of jobs and sustainable growth, lower energy bills, improved health and security of energy supply. To achieve these goals, specific financing schemes for energy efficient building renovations need to be made available, easily accessible and effective.

Accelerating investments in the worst-performing building stock

Member States are required to identify and describe the worst-performing segments of their national building stock in their long-term renovation strategy. Options for how to characterise these are described in the [template for developing an LTRS](#). An example could be to set a specific threshold, such as an energy performance certificate (EPC) category (e.g. below "D"), a primary energy consumption figure (expressed in minimum kWh/m² per year), or even buildings built before a specific date (e.g. before 1980). By identifying and addressing the performance of the worst-performing buildings in the country, Member States have the chance to simultaneously set policies that target energy poverty as required by the revised EPBD.

People living in the worst-performing building segments are often threatened by energy poverty. Energy poverty is a result of a combination of low income, high energy expenditure and poor energy performance of dwellings, which is why actions to alleviate energy poverty should include energy efficiency measures alongside social policy measures [2]. While several Member States have already addressed energy poverty within their LTRS, the EPBD now requires that national actions that contribute to the alleviation of energy poverty should be outlined in the LTRS [3]. These should include financial schemes targeting the worst-performing dwellings to improve the well-being of the most vulnerable people, especially those living in social housing and in rural areas. Example measures could be subsidies and eco-loans targeting energy renovations among social housing associations. By setting up specific financial support for the worst-performing building segments and energy-intensive heating systems, like old oil boilers or coal stoves, the requirements to improve energy performance and combat energy poverty can be addressed simultaneously.

¹ This guidance contributes to the project "OUR BUILDINGS" funded by the European Climate Initiative (EUKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

1. Financing energy efficiency in the built environment

Public funding by the European Commission is available but has to be channelled successfully through national and regional programmes to effectively speed up energy efficiency investments in residential and public buildings. Although there are abundant financial resources and the European Commission plans to dedicate more resources to low-carbon projects in the next funding cycle, it is important to secure the effective use of funding on the ground. Buildings have the largest potential for carbon reduction and generating multiple other benefits through improving their energy performance.

Private financing has to be increased to achieve large investment volumes. Public financing schemes triggering additional private resources, such as state guarantees or tax incentives, are crucial to ensure the investment needed. Other programmes focus on de-risking, such as the European Commission's Private Finance for Energy Efficiency (PF4EE) instrument, and on technical assistance, including the European Investment Bank's (EIB) ELENA facility (see chapter 3.2.).

Although most public financial resources directed to energy efficiency are invested in the building sector (followed by industry and transport) there is still a need for "public funding to leverage additional private-sector investment or address specific market failures" (EPBD, Article 2a, 3.c).

TYPES OF FINANCIAL SUPPORT SCHEMES

Grants/subsidies are the second largest form of public finance. Subsidy schemes can address financial gaps for homeowners or companies. Grants/subsidies usually trigger a high co-financing (50%).

Example: *"Habiter mieux" programme, France*

Debt financing covers loans – often at low interest rates – offered by public institutions to building owners, energy companies or businesses. Debt financing often comes at limited public cost compared to other financial schemes.

Example: *KredEx renovation loans, Estonia*

Tax incentives are the financial schemes that boost the largest financial volumes in both private and public financing. Tax rebates and exemptions can remove financial barriers to energy efficiency investments and make energy saving technologies more beneficial.

Example: *Tax reduction scheme on renovation works, Belgium*

Guarantees are responsibilities by public institutions to help with repayments in case of unforeseen circumstances. A guarantee reduces the risk for the receiver and allows them to attract funds with more favourable conditions (e.g. risk sharing facilities).

Example: *Energy Efficiency and Renewable Sources Fund, Bulgaria*

Multiple schemes combine types of financial support into integrated financial solutions. Often subsidies are combined with a loan to reduce high upfront costs for the project owners or debt financing schemes come with a guarantee to reduce risks.

Example: *KfW support schemes, Germany*

1.1. Financial schemes to overcome investments barriers

Building renovation measures usually come with high upfront costs and long payback periods. Despite the public funding schemes available, missing capacities and complex application and planning phases often limit the accessibility of these financial resources. Other barriers include a lack of capital, high borrowing costs, lack of trust and missing resources for effective project development and implementation. Well-designed financing schemes successfully address both financial and non-financial barriers.

Schemes addressing financial barriers

High capital costs, long payback periods and high risks hinder the implementation of low-carbon projects. Schemes designed to overcome the initial barrier of financing energy efficiency projects in the building sector may provide grants, subsidies, debt financing or instruments to trigger additional private funding.

For example, the [Energy Efficiency and Renewable Sources Fund \(EERSF\)](#) in Bulgaria overcomes financial barriers by providing guarantees in combination with debt financing. The fund is equipped with grants from international funders, such as the Global Environment Facility (GEF) and the World Bank, as well as European support from the Austrian government. The scheme provides both partial credit guarantees and portfolio guarantees, thereby reducing a financial barrier to energy efficiency investment. Beneficiaries can be municipalities, corporations and private individuals implementing energy efficiency projects.

The German public development bank [KfW](#) offers different loans for energy efficient renovation measures in combination with a repayment bonus. The multiple schemes address renovations ([energy efficient refurbishment](#)) and new constructions ([energy efficient construction](#)) and are directed to private homeowners as well as municipalities and social housing companies. The grants help overcome financial barriers related to high upfront costs and long payback periods and increase with more ambitious energy savings relating to the [KfW Energy Efficiency House](#).

Schemes addressing non-financial barriers

Some financial schemes work in tandem with additional policy measures to overcome non-financial barriers. These may include campaigns to raise awareness of the benefits of renovation measures, technical assistance facilities to develop projects and information campaigns for local contractors or energy auditors.

The [Warmer Homes Scheme](#) in Ireland provides different grants to homeowners, including for attic or wall insulations or the installation of renewable heating systems. Its Better Energy Homes Scheme is funded by resources from the European Cohesion Policy and the European Regional Development Fund (ERDF), and is managed by the Sustainable Energy Authority of Ireland (SEAI). The grant includes a mandatory Building Energy Rating (BER) after the renovation work is carried out to improve monitoring. An energy assessment of the building is also possible prior to the renovation work in order to help the homeowner identify the most effective refurbishment measures. The scheme also publishes an online list with registered contractors. This addresses the potential problem of owners lacking

knowledge about local workers or companies that have the relevant experience to install energy efficient measures in their homes.

The Latvian [“Let’s live warmer” campaign](#) is another good practice example for a successful communication campaign to provide residents with information and to encourage the insulation of multi-apartment buildings. The campaign, launched in 2010, provided information on the financial scheme “Improvement of Heat Insulation of Multi-Apartment Residential Buildings” funded by the ERDF. It covered conferences, seminars, workshops and discussions on national, regional and local level organised by the Ministry of Economics of Latvia, which steadily increased the number of projects submitted for funding. Since 2011, an annual [“Best Energy Efficiency Building”](#) contest has further raised awareness and engaged the public.

1.2. Challenges for public authorities and private homeowners

Often, available financial resources are not exploited to the full extent due to lack of capacity and trust on the side of potential beneficiaries. Private homeowners as well as public authorities often lack information on available funding options or the resources and knowledge to apply for financing schemes.

In the case of public buildings and small municipal authorities, there is hardly ever a central agency responsible for project development and tender procedures that has an overview of funding possibilities, requirements and eligibility criteria. Additionally, there is often a lack of trust in energy efficiency improvements and in the multiple other benefits of building renovations. A lack of standardised underwriting processes, certifications and technical knowledge results in high transaction and operation costs, meaning financial institutions are generally reluctant to lend to energy efficiency projects.

The [Energy Efficiency Financial Institutions Group \(EFFIG\)²](#) founded the DEEP (De-risking Energy Efficiency Platform) portal in 2017 to provide in-depth analysis and detailed information on the performance of energy efficiency investments. Users of the database can upload and share their projects to improve data availability and transparency in energy efficiency investments, both in buildings and industry. By sharing knowledge and experience, a comprehensive assessment of the benefits and financial risks can be undertaken to de-risk investments.

1.3. Successful design and implementation of financial schemes

Successful financing schemes will need to address the specific needs of both national and local markets as well as trigger additional private resources. While energy savings per Euro and leveraging a high ratio of private investment from public funding are important considerations, other factors are also vital for the long-term success of financial schemes. Six key aspects are presented below.

² The Energy Efficiency Financial Institutions Group (EFFIG) is a work platform established by the European Commission’s DG Energy and the UNEP Financial Initiative in 2013 to accelerate energy efficiency investments

1. Political support and favourable legal framework

Government support can help secure EU funding and set up national and regional support measures. In Estonia, initial funding from the Ministry of Economic Affairs was crucial to establish a national loan programme. The commitment of the government to set up a national agency (KREDEX) that deals with the development and management of financial schemes helped ensure a broad usage of public funding.

Successful financing schemes should be embedded in a legal framework that supports their implementation. For example, in the case of multi-family buildings with mixed ownership, the scheme design and financial legislation should allow for homeowner associations to be easily registered and to obtain common loans or receive grants. Successful examples are the Estonian renovation loan programme and the EU-funded [Ukrainian Energy Efficiency Fund](#), which aims to establish 2000 new homeowner associations.

Legislation should also allow for a combination of grants and loans to realise more energy renovations with high upfront costs that need high capital investment.

2. Simple procedures and practical support measures

National and, especially, regional and local officers often lack awareness about effective energy efficiency financing options. Easily accessible advice and technical assistance facilities can help to overcome this missing knowledge. Practical support, the development of bankable projects, user guidance and trainings, as well as support with tender procedures and complex application processes, should be integrated in the design of funding programmes.

Existing programmes, mostly targeting private homeowners, include “one stop shops”, which provide comprehensive information and services on all aspects of energy renovations in one place. Also, user-friendly online application systems and forms can simplify the accessibility of grants or other instruments.

3. Ability to attract private funding

As mentioned above, the sheer size of the necessary investment in the building sector requires additional private resources. Successful schemes should leverage a high ratio of private financial resources by including de-risking facilities (e.g. the P4EE Risk Sharing Facility) or state guarantees.

4. Contribution to long-term climate targets

Schemes financing energy efficiency measures in buildings are supposed to contribute to the long-term goal of a climate-neutral building stock. It is therefore helpful for public officers to set clear targets in funding schemes. A specific amount of energy saved, or CO₂ emissions reduced could be part of eligibility criteria for public funding schemes.

5. Long-term viability

A scheme's long-term viability creates stability and certainty for project developers, investors and other actors. Meaningful evaluation of the effectiveness of a scheme can usually be carried out only after several years of existence. It may take time for beneficiaries to become aware of the schemes and to prepare successful projects. Especially in the design phase of the national LTRS, public officers need to plan ahead and to make sure funding schemes run over the entire period covered by the strategy.

While longevity is an important feature, it might also risk slowing down the mobilisation of further investment. Where support is perceived as given, it reduces the need for innovation and may not attract new project developers. Therefore, a regular revision or update is useful.

Examples of long-term directed schemes are the UK's climate change agreements and climate change levy schemes, which have existed since 1999 and are currently running until 2023; and the Polish thermo-renovation and repair fund.

6. Flexibility

Another important factor is the flexibility to adapt to new circumstances, like a change in demand or changing political conditions. A successful example is the Programme of Energy Renovation of Family Homes in Croatia which has been adapting its definition of eligible building types regularly to increase the number of beneficiaries. At the same time the required documentation and registration process to apply for the programme has been simplified.

ASSURING HIGH QUALITY RENOVATIONS

The quality of renovation works is crucial to ensure the long-term energy efficiency performance of the building. High quality materials and properly executed renovation measures are key to a healthy and warm home. Schemes incorporating high quality or performance standards of the construction works ensure a high-level energy efficiency standard.

An example of a financial support scheme incorporating quality assurance standards in the funding model is the “Wohnhaussanierungsrichtlinie”, a regional subsidy in Austria from 2014. The funding programme includes different funding levels for enhanced qualities, such as incentives for an increased insulation thickness and material qualities that go beyond minimum funding requirements.

Another example of quality assurance is the RGE (“Reconnu garant de l'environnement”) quality label from the French Environmental and Energy Agency (ADEME). Starting in 2011 it provides assurance that companies and contractors in the buildings and renewable energy sector meet agreed quality standards. Since 2015 most financial support schemes by ADEME include the RGE Études label for professionals carrying out the construction works in their eligibility criteria.

1.4. Step-by-step guidance for designing a financing scheme

The following steps are meant as recommendations on how to set up a financing scheme to ensure its effectiveness. While not comprehensive, they offer a minimum checklist to guide policymakers through the process.

Table 1 Step-by-step guidance for a successful scheme design

Step 1 Carry out a pre-assessment

- Develop a detailed pre-assessment to categorise the status quo and the market according to end users and gain clear understanding of the specificities of particular market segments, in particular on possible barriers.
 - What is the exact purpose of the instrument?
 - Who are the beneficiaries?
 - What are possible renovation benefits?
 - Building stock analysis
 - Existing legal framework

Step 2 Map available resources

- Create an overview of available financial resources including an investigation of the investment/borrowing capacities of the local government, the residential sector, and the commercial sector.
 - What are budget lines for energy efficiency?
 - Budget transfers for energy efficiency purposes?
 - Borrowing capacity and willingness
 - Available financing sources
 - Household disposable income
 - Household energy expenses

Step 3 Get inspiration from EU Member States

- Research active schemes operating in other Member States and learn from good practices. One relevant source of information is the new Database of Energy Efficiency Financing Schemes (DEEP).

Step 4 Design the scheme framework

- Design the scheme. Set up a target and define specific target group(s). Explain and time the target to be achieved.
 - Which building segment to renovate and how many buildings?
 - How deep should the renovation be?
 - What resources will be needed (expected financing from the local government and building owner)?

Step 5 Identify triggerpoints

- Identify the trigger points when investment in energy saving measures can most easily be made. Frequently, combining energy efficiency measures with other building works will reduce costs and disruption.

Step 6 Involve stakeholders

- Encourage stakeholders to access funds. Carry out a marketing analysis for the residential and commercial sector. Consider how the scheme can encourage comprehensive investments from the private sector to achieve large energy savings.
- Why should the owner invest (a view from his/her perspective)?
- Find his/her optimal debt/equity balance
- How to explain this to the owner?

Step 7 Check the supply chain

- Determine whether the supply chain is in a position to meet the increased demand. Should additional market support be required, ensure this becomes an integral part of the scheme design.

Step 8 Start a pilot phase

- Piloting a scheme before full rollout can anticipate any potential issues that might need further tweaking or adjustment.

Step 9 Secure good communication

- Ensure good communication with the target audience, both at time of launch and on an ongoing basis by using relevant channels.
- Which channels are best for the target group?
- Can I reach all relevant stakeholders with the same approach?
- What additional resources are needed for a productive communication?

Step 10 Prepare adequate resources for operation

- Ensure the scheme is managed properly and in a timely fashion. Plan enough resources for the ongoing administration of the scheme. Give some time for new or recently amended schemes to be used effectively.
- Set up detailed timing and project management
- Assess and possibly adapt the necessary organisational structure of the local/central government
- Are new policies or changes in the legal framework necessary? Name obstacles and match them to policy ideas; decide upon necessary changes in the policy framework, design principles and timeline for implementation.

Step 11 Establish a risk management procedure

- Carry out an ex-ante risk assessment and establish a risk management scheme. Be prepared to amend the scheme in response to operational experience and external factors.

Step 12 Set up regular monitoring

- Use regular monitoring to generate publicly available data. Monitor progress regularly based on identified KPIs and evaluate the scheme periodically. Make the results publicly available.

2. Overview of available financing schemes

Energy efficiency investments in the building sector are subject to multiple financial and non-financial barriers, such as lack of capital and capacities, as well as regulatory barriers. Different types of schemes are planned and implemented across the EU to overcome these barriers and effectively invest in energy efficient building renovation. Nevertheless, according to the [Energy Efficiency Financial Institutions Group](#) (“EFFIG”) there is a strong need to scale up investments and the use of financial instruments.

2.1. EU funding streams

The European Commission provides several funding streams and guarantees from the EU budget to support the objectives of the Energy Union and the Clean Energy Package.

EU Structural and Investment Funds (ESIF)

Five European Structural and Investment Funds (ESIF) support EU countries in financing sustainable development and the transition to a low-carbon and healthy economy. The funds are managed by the European Commission and the Member States and are delivered via multi-annual programmes at national or regional level. With the next programme running from 2021-2027, the EU Commission plans to increase the climate-related funding to 25% of the Multiannual Financial Framework (MFF), accelerating their efforts to meet the climate goals set in the Paris Agreement.³ The €206 billion dedicated to climate-related funding under the current MFF would be increased to €320 billion.

Over the period 2014-2020, €18 billion has been allocated to energy efficiency by the ESIF, especially the European Region Development Fund (ERDF) and the Cohesion Fund (CF). Each has allocated €13.4 billion for energy efficiency measures in public and residential buildings [4]. The ERDF’s investment priorities include support to energy efficiency, smart energy management and renewable energy use in public buildings and the housing sector. In addition, at least 5% of the ERDF resources allocated at national level under the investment for growth and jobs goal are to be allocated to integrated actions for sustainable urban development.

The Juncker Plan (European Fund for Strategic Investments)

The European Fund for Strategic Investments (EFSI) – the Juncker Plan – is a joint initiative by the European Commission and [the European Investment Bank \(EIB\)](#) to mobilise private funding for strategic investments. The EFSI is a €16 billion guarantee from the EU budget, complemented by a €5 billion allocation of the EIB’s own capital, aiming to unlock additional investment of at least €315 billion over a three-year period. The aim is to de-risk development projects, accelerate private financing and maximise the effectiveness of the financial resources. From 2021 it will be replaced by the InvestEU fund covering the period 2021-2027.⁴ The goal of the European Commission is to make access to public

³ In the EU COM 2018 (321) from May 2, 2018 on “A Modern Budget for a Union that Protects, Empowers and Defends - The Multiannual Financial Framework for 2021-2027”

⁴ European Commission (2019). Factsheet “What is the InvestEU programme?”, Brussels, March 2019

funding even simpler, more efficient and more flexible by establishing an advisory hub and a comprehensive project database.

INVESTEU PROGRAMME

- ✓ Covers the period **2021-2027** mobilising public and private investment through an EU budget guarantee of €38 billion
- ✓ Comprises a fund, advisory hub and portal providing an easily accessible database
- ✓ Investment volume:
 - Sustainable infrastructure – €11.5 billion
 - Research, innovation and digitalisation – €11.25 billion
 - SMEs – €11.25 billion
 - Social investment and skills – €4 billion

Other EU instruments

The [European Energy Efficiency Fund \(EEEF\)](#) is another funding option in the form of a public–private partnership provided by the European Commission to assure the implementation of the Energy Union. The fund provides direct financing or channels resources through financial institutions by partnering with entities on municipal, local or regional level. The instrument provides tailored financing (both debt and equity instruments) in particular for energy efficiency projects but also for renewable energy and clean urban transport projects. Beneficiaries are municipal, local and regional public authorities or entities acting on their behalf. It was established in 2011 with a global volume of €265 million.

Additionally, the EIB provides framework loans to cities and municipalities to finance specific single large-scale projects exceeding €25 million. The initial support then often attracts other investors. The projects are mostly connected to infrastructure, energy efficiency, renewable energy, transport and urban renovation and represent flexible funding options to municipal actors.

Another bank financing energy efficiency improvement at European level is the [European Bank for Reconstruction and Development \(EBRD\)](#). The EBRD's Sustainable Energy Financing Facilities ("SEFFs") support local banks, leasing companies and microfinance institutions to increase their energy efficiency financing activities. SEFFs provide long-term funding and integrated project development assistance to municipalities, especially in Eastern Europe. Since 2006, the EBRD has given out over 80,000 loans amounting to over €3 billion in 22 countries. One example is the [Slovak Sustainable Energy Financing Facility](#) developed in collaboration with the Ministry of Environment of the Slovak Republic with support from the Ministry of Agriculture, Food and Environment of Spain, which is financing the technical assistance of the programme. The current third phase (SlovSEFF III) of the facility aims to invest in industrial and residential energy efficiency measures as well as renewable energy, addressing private companies, energy service companies (ESCOs) and housing associations or cooperatives.

2.2. Good practice schemes in the Member States

Both on national and municipal levels, a number of financial instruments are in place across Member States to mobilise private funding and accelerate energy efficiency measures. The following section introduces some good practice schemes, often incorporating at least one of the success factors above.

National funding schemes

Lithuania: The [Housing Energy Efficiency Agency “Beta”](#) was established in 2001 by the Lithuanian Ministry of Environment to provide assistance to homeowners and administrate the national energy efficiency schemes and projects. Examples of programmes targeting private homeowners are the Multi-apartment building renovation (modernisation) programme and the Energy efficiency improvement in the household sector under the Special Climate Change Programme financed with state and municipal resources. The latter gives out grants and loans to eligible owner-occupiers under two sub-measures. Financial support is granted to renovation measures of residential buildings that reduce at least 20% of energy consumption and ensure an energy label class C and to measures concerning renewable energy system installations [5].

The modernisation programme is running in its second phase and renovated nearly 700 multi-apartment buildings as of March 2018 with another 400 in the pipeline. The revolving fund is financed by European structural funds, Lithuanian national funds and private sector contributions and it is one of the main financing instruments by the Lithuanian government to increase energy efficiency in the residential sector. The second phase of the programme, Jessica II, focuses on increasing the share of private finance by creating a “pre-financing” instrument which attracted €180 million by financial intermediaries which is secured by the repayments of the programme’s portfolio.

Belgium: In Belgium, residential buildings are responsible for a high share of energy consumption. The government has introduced a number of grants and other financial schemes to increase renovation works, such as the photovoltaic solar panel grant scheme and the insulation grant scheme for older buildings. A tax relief scheme was first introduced as a temporary measure in 2000 and was implemented permanently in 2011. The reduced [VAT Tax Relief Scheme](#) enables owners of residential buildings that are older than 10 years to pay a reduced VAT rate of 6% on various renovation measures, compared to the normal VAT rate of 21% for other construction services. The lower tax rate aims to incentivise owners to carry out renovation works and improve the energy efficiency of their building envelopes or heating systems. The scheme targets residential buildings constructed 10 or more years ago because they are the most inefficient buildings in the overall Belgian housing stock.

Czech Republic: The Czech State Environmental Fund manages the [“New Green Savings Programme”](#) (Nová zelená úsporám), following the Green Saving Programme, one of the most effective funding programmes in the Czech Republic. It provides grants to support energy savings in detached and multi-family buildings through thermal insulation works, the efficient use of energy sources and renewable energy systems. The programmes support renovation measures in existing buildings as well as the construction of new buildings to passive-house standards. The programme subsidises up to 50% of the total expenses, depending on the energy savings. The New Green Savings Programme is funded by revenues from the sale of European Union Allowance and European Union Aviation Allowance units.

Bulgaria: In 2005 the [Residential Energy Efficiency Credit Line \(REECL\)](#) was introduced in Bulgaria. Under the credit programme, the EBRD provides credit lines to local partner banks which grant loans to end users. The Kozloduy International Decommissioning and Support Fund (KIDSF) provides grants of up to 35% of the loan [6]. Beneficiaries can be actors from the residential sector, owner associations or service providers such as ESCOs. Though in the initial phase the credits were mostly offered to individual homeowners, the requirements and criteria were adapted to the market so that associations

of apartment owners are now eligible. The prevailing projects covered energy-saving windows (45.2% of the total volume of loans) and heat pumps (27.5%). The equivalent electricity savings from the projects' implementation was about 182.7 GWh per year. The continuation of the credit line for energy efficiency in households started in mid-2011 and ended in 2015, when the funds were fully depleted. The third stage of the same credit line started in 2016.

Estonia: In 2001, the Estonian Ministry of Economic Affairs and Communications established an independent financial foundation providing financial solutions to citizens and local governments, called [KredEX](#). The organisation helps companies develop and expand to foreign markets, offering loans, venture capital, credit insurance and state guarantees. Energy efficiency improvements in buildings represent a large share of its financing. KredEx offers the possibility to buy new homes as well as realise investments in energy efficiency measures to individuals, housing associations, local governments and companies.

A combined scheme in Bulgaria

In Bulgaria, the Energy Efficiency and Renewable Sources Fund (EERSF) combines guarantees alongside debt financing. The scheme was established with the Energy Efficiency Act in 2005 with the support and financial participation of the GEF, the World Bank and the Bulgarian government. The initial capital was supplemented by donations from the Austrian government and several private donors.

Both single and multi-family buildings are eligible for loans at preferential interest rates. For complete renovations of buildings, EERSF also provides residential portfolio guarantees for individual bank loans taken by apartment owners. Commercial banks welcome the guarantee as it can be applied to all apartment owners, some of whom might otherwise not be eligible for a loan.

The scheme includes its own evaluation facility as well as experience in quality assurance and monitoring of the project implementation and performance.

Romania: For 10 years the [Green Economy Finance Facility \(GEFF\)](#) has been active in Romania. The flexible scheme involves a credit line from the EBRD lending amounts of up to €5 million to local institutions. These loans are used for sub-lending to private homeowners, companies and local authorities for the implementation of energy efficiency projects or green mortgages (see chapter 4.4.). The GEFF combines financial support with technical knowledge; it supports lenders with training and marketing activities and has established a verification mechanism. Importantly, the design of the facility aims to avoid bureaucracy by ensuring an easy and smooth evaluation process of project proposals. The current GEFF cycle from 2017 includes a residential programme focusing on financing energy efficient new buildings, energy efficiency renovations, water saving and small-scale renewable energy systems. A €100 million financing framework from the EBRD was made available to homeowners through the local banks Banca Transilvania and UniCredit Bank [7].

Financial support of New Green Buildings in Romania

The Romania Green Building Council (RoGBC) developed the Green Mortgage Programme together with Raiffeisen Bank based on an innovative green homes certification. The certification seeks to assess and recognise top-performing residential projects using sustainable construction principles. A green mortgage is a loan given out at discounted interest rates when purchasing buildings certified as “Green Home” by RoGBC. The programme creates successful cooperation between a bank, the investor/developer of the building, the home buyer and the RoGBC, where the latter ensures that residential housing projects meet energy performance standards and quality criteria. The scheme overcomes the market barrier that hampers the construction of greener, more energy efficient homes.

Local and regional funding programmes

Ireland: The Sustainable Energy Authority of Ireland (SEAI) provides different financial schemes including renovation grants for private homeowners and local municipalities. The [Housing Association and Local Authority Energy Efficiency Scheme](#) addresses registered housing associations and municipal authorities when they plan to carry out large-scale and often technically challenging renovation works. The SEAI aims to empower housing associations and municipalities to retrofit large shares of their housing stock thereby delivering renovations in an efficient and cost-effective manner.

The eligible buildings under the grant scheme must be built before 2006 and have to be upgraded to an energy efficiency level of B2 BER (Building Energy Rating) according to the New Building Regulations from 2019. Housing associations can apply for up to 50% of the renovation costs, while local authorities are eligible for up to 35%.

France: Many regional programmes support rural public and private homeowners in France when investing in energy efficient renovation measures. In the southern region of [Nouvelle-Aquitaine](#), landlords of social housing can apply for subsidies of 40% or up to €6000 per renovated unit. Conditions are that the building must be under a social housing agreement and reach the level of a low-energy building after renovation (Bâtiment Basse Consommation énergétique (BBC) label). Another eligibility criterion to ensure the quality of the renovation is that the work must be carried out by a professional holding the RGE quality sign (see chapter 1.3).

Bulgaria: In 2016 and 2017 the [CITYvest](#) project, a Horizon2020-funded initiative, provided one stop shops to boost energy-saving activities in pilot regions in Europe. One of these regions is Rhodope in Bulgaria, where a one-stop-shop approach was introduced, based on the REnoWATT model in GRE-Liège region in Belgium. The so-called [Rhodoshop](#) was implemented in six pioneering municipalities. Key stakeholders are the Association of Rhodope Municipalities, the Sofia Energy Centre and GRE-Liège, which provides training and capacity building for Rhodoshop staff on practical experience on one-stop-shop functions and ongoing support during operation. The idea is to build up a suitable infrastructure to assist the municipalities in securing funding and energy service contracts for energy efficiency works in public buildings. Local municipalities, especially in small-sized rural communities, get help in building technical, economic, legal and administrative expertise for implementing energy efficiency renovations on a large scale. Energy performance contracts worth around €60 million with €36 million of capital expenditure have been established so far.

ONE STOP SHOP APPROACH

One stop shops aim at providing integrated renovation services for existing buildings. Interest in the concept increased after the recast of the EU EPBD [2010/31/EU], which calls for improved advisory tools for consumers. Initially, huge potential was identified in the existing residential building stock. Interest took off in the Nordic countries, in which more than 40% of the building stock consists of single-family houses.

Often, a homeowner needs to contact several different contractors to get an energy renovation completed, which also increases the risk of mistakes. To fill the void between the supply and demand side, innovative user-oriented services began to emerge in Europe to unburden the customer by providing them with an integrated renovation service. The advantages of one stop shops include offering a turnkey solution to clients, better communication and knowledge sharing and the potential to minimise the risk of errors in the process.

One stop shop schemes across Europe include:

- **Pass Picardie, France**
- **Oktave, France**
- **Rhodoshop, Bulgaria**
- **SuperHomes, Ireland**
- **BetterHome, Denmark**

Source: Turnkey Retrofit, Benchmarking of promising experiences of integrated renovation services in Europe, 2019

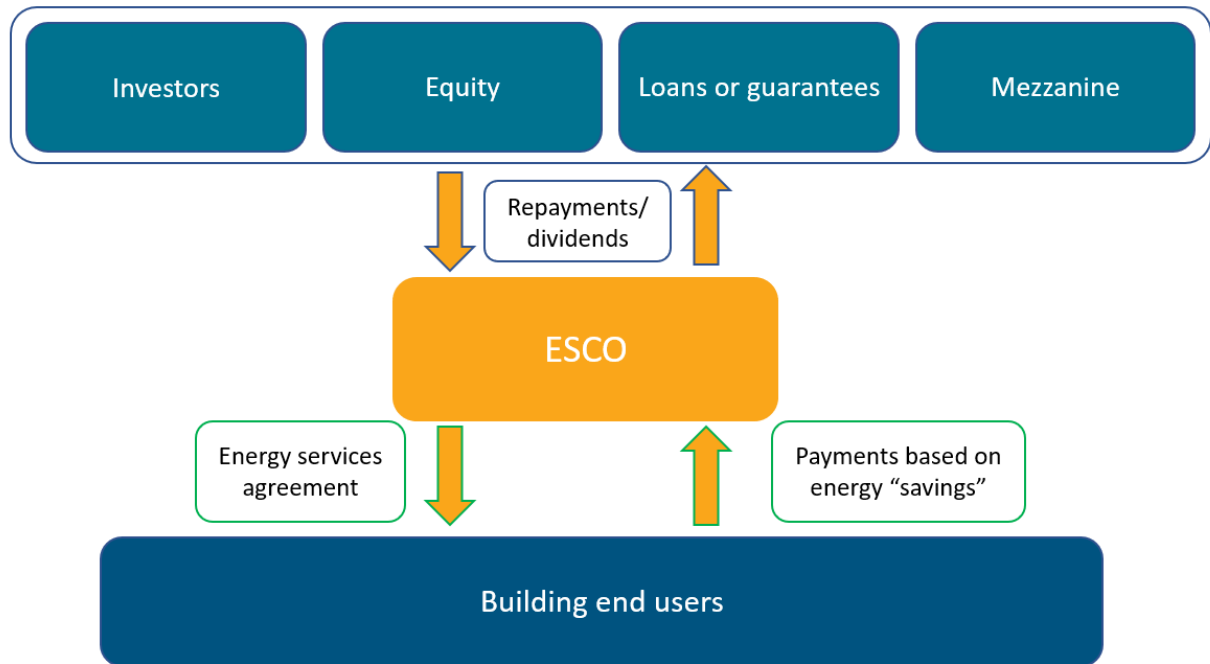
2.3. Energy service companies

To accelerate energy efficiency improvements in buildings, energy service companies (ESCOs) have spread across Europe over the past decade. ESCOs usually provide a range of energy services to end users, including supply and implementation of energy savings projects, building refurbishment, energy conservation and energy infrastructure outsourcing, without any upfront investment costs. The investment is repaid through the energy savings achieved over the period of the contract. ESCOs usually cover performance or energy saving guarantees in their service agreements.

An ESCO can operate under different business models, such as energy performance contracting or energy supply contracting. Unlike traditional energy suppliers, they can provide or arrange financing for energy projects.

Though a lot of ESCO models are in use, the approach is not yet generalised and is still subject to some barriers. One barrier is the lack of awareness and suitable information on the concept, leading to a lack of trust by financial institutions and users. Also hampering a faster market uptake are legal and political barriers, like the lack of an official or generally accepted ESCO definition, certification and standards. Additionally, as many stakeholders are involved, good cooperation is crucial for the successful implementation of projects.

Figure 2 Schematic graphic description of an ESCO model. Own figure based on Núñez Ferrer (2019) [8]



ESCOs in Romania

In Romania, barriers still inhibit the wider uptake of ESCO models. The Romanian ESCO Working Group⁵ aims at removing barriers and implementing a legal framework of energy performance contracts in the public sector. An energy service contract has to be in line with market realities and the legislative context, such as public procurement rules.

Barriers include a lack of ESCO certification standards and standardised authorisation procedures, as other financial instruments are subject to. The concept must still confront a lack of acceptance by financial institutions and financiers as well as different interpretations of the legislation. Economic barriers involve the low and fluctuating energy prices in Romania, and high perceived technical risks.

A general mistrust based on the lack of standardisation, complex contracts and variable offers prevents more ESCO services from being implemented. A few ESCOs are in operation but there is still a lack of competition to drive the market deployment and a lack of trust among the beneficiaries. To ensure a successful uptake of ESCO models, functional partnerships between energy service providers and sub-contractors have to be established, as well as trusted entities or initiatives that act as facilitators.

ESCOs in Bulgaria

The [Bulgarian Alliance for Energy Efficiency](#) implements 95% of energy performance contracts in Bulgaria. Though the market is quite active, some barriers remain. The project development process at the contracting authorities often lacks resources for feasibility studies and multi-solution analyses,

⁵ Findings from the second National Roundtable on financing energy efficiency in Romania by the Romanian ESCO Working Group in June 2019

which slows down the process of developing viable project proposals. Strict requirements and a complex set of regulations also hinder the tender procedure, while a lack of standardisation in contracts increases operational costs. Though a steady increase in the ESCO market is expected in Bulgaria by 2030, public grants will not be sufficient: to reach the full potential, private investments need to be unlocked. A special ESCO facility or agency could aggregate projects and develop well-structured and viable projects, while a large ESCO would be useful to implement the large projects and adjust to the market size.⁶

EXAMPLES OF ESCOS IN LATVIA AND FRANCE

LABEEF

In 2016 the Latvian Baltic Energy Efficiency Facility (LABEEF) was founded to speed up deep renovation in the Latvian residential building sector. A majority of the housing sector in Latvia was built between 1941 and 1992 as prefabricated high-rise multi-family buildings.

LABEEF aims to support ESCOs in implementing renovation measures in multi-family buildings based on energy performance contracting. Latvia's energy strategy 2030 set the target of an average energy consumption of 100 kWh/m²; it is currently at around 160-180 kWh/m² in the multi-family building stock. By 2022 the company wants to achieve the renovation of 20% of all multi-family apartment buildings.

Energies POSIT'IF

The Energies POSIT'IF initiative was created in France in 2012 as a public-private partnership. The aim was to promote, support and implement the energy improvement of one million multi-family apartment buildings in the Île de France region. The initiative has the role of a public ESCO acting as an integrated service provider and assuring third-party funding for energy renovation measures in residential apartment buildings. The organisation changed its name into *Île-de-France Energies* by the end of 2018 but still follows a one-stop-shop approach offering technical, financial and insurance services to the building owners and thus reducing transaction costs.

⁶ Based on the Sustainable Energy Investment Forum 'Financing Energy Efficiency in Central and South-Eastern Europe' in Sofia in June 2018

3. Accessibility of financial support

Access to financial support is an important prerequisite for the uptake of energy efficient buildings. Bankable projects and the use of available financial resources require access to information, effective knowledge transfer and enough capacities and resources to apply for funding and to fulfil the funding criteria.

Although there are multiple financial support schemes available, the distribution among the regions is uneven. As of 2018, only 2 out of 66 energy projects funded by EFSI are carried out in South East Europe (€100 million out of more than €8 billion), none of which has a buildings focus. Obstacles to accessing funding opportunities include the low capacity and skillset of beneficiaries to properly prepare and implement projects, causing delays in application procedures.⁷

3.1. Barriers and needs

As mentioned above, individuals, housing associations and local authorities still face obstacles when searching for and accessing adequate funding and financial resources for specific projects. The EU funding streams are not fully exploited, especially for energy efficiency works in the building sector.

There are different points of view when it comes to financing energy efficiency. Regarding private or public homeowners in the residential sector, the main barriers include a limited awareness about the available financial support, capital-intensive renovations and uncertainty about which measures to implement. There is also often a general lack of trust in the quality of renovations, materials and construction methods used, leading to a distrust of energy efficient refurbishments.

Public authorities often lack the resources to develop viable projects and feasibility studies. A lack of standardised procedures and missing financial and human resources for project development results in few projects being implemented. A lack of trained staff in the communities and regional development agencies (responsible for allocating structural funds) as well as high requirements often hamper the large-scale deployment of energy efficiency measures and effective use of available funding. Public authority staff in charge of the application processes for financial support need special technical training. Even for banks and institutional investors, a lack of capacities and standards in project development and documentation processes makes it hard to trust the estimated energy savings.

In Romania, the problems centre around accessible financial support for public buildings. As discussed during stakeholder workshops⁸ in different cities, there are abundant funding options for residential buildings, but financial resources for public buildings are lacking. A suggestion by participants is to redirect resources to public buildings where they are not fully used for residential buildings. This need for flexibility is also raised by the heterogenic owner structure in multi-family apartment buildings, which often hampers or delays agreements for the refurbishment of buildings. Funding options for

⁷ Compare proceedings of the Sustainable Energy Investment Forum, Bucharest in February 2018 https://ec.europa.eu/energy/sites/ener/files/documents/seif_pe_bucharest_proceeding_report_15.04.2018_en.pdf

⁸ The stakeholder workshops have been carried out in the course of the EUKI project “OUR BUILDINGS”.

historical buildings in need of special renovation measures are also lacking. As older, historic buildings are harder to insulate properly, they need specifically skilled workers.

Needs and solutions

Potential solutions that could address the barriers outlined above are a thorough knowledge transfer and capacity-building activities in local governments or public authorities. Comprehensive education and technical training in energy efficiency measures and energy savings would build trust and could enhance cooperation between public officers and companies providing energy efficiency solutions. A closer connection and enhanced cooperation should also be established with the banking sector and other financial institutions to unblock and overcome barriers and jointly develop strategies and solutions.

A central agency focusing on accessing financial support for the energy efficient refurbishment of public buildings could coordinate ongoing tender procedures and applications, speeding up project development and implementation. Moreover, additional Project Development Assistance (PDA) facilities designed for small-scale projects could support local authorities as well as private beneficiaries with technical and preliminary assessments (feasibility studies, business plans, maintenance of databases). Regional one stop shops, as presented above, are a good example of project development facilities that ensure a smooth process for the building owners.

As mentioned, the Energy Efficiency Financial Institutions Group (EEFIG) created the DEEP platform to benchmark energy efficiency investment, increase transparency and thereby de-risk investment projects. Another tool developed is the [Underwriting Toolkit](#), supporting financial investors and project developers in improving their risk assessment and valuing of energy efficiency investments. The toolkit helps financial institutions to increase their deployment of capital into energy efficiency projects by developing a standardised approach to appraising the value and risks of an investment or a loan. It also aims to establish a common language for enhanced cooperation between the financial industry and companies providing energy efficiency solutions.

Although many schemes presented above include some sort of technical assistance and PDA facilities at EU level (see chapter 3.2.) help prepare bankable projects, local authorities still often lack the expertise and resources to apply for the initial support. For smaller municipalities, it is not possible to invest high capital volumes, for example for a grant under the European Local Energy Assistance (ELENA) initiative, without aggregating projects. Often a central agency is missing in provinces or regions for the aggregation of projects as well as to carry out pre-studies which are needed to apply for technical support, which is only possible in certain languages. Member states should therefore invest in small-scale technical assistance facilities that could support (rural) municipal authorities in carrying out initial feasibility studies, overcoming language barriers and preparing applications for other existing PDAs.

AN EXAMPLE OF PRE-TECHNICAL SUPPORT

In the Rhodope region in Bulgaria, the H2020 CITYnvest project acted as pre-technical assistance supporting local authorities who joined forces and applied for a PDA under the Horizon 2020 grant. CITYnvest supported the local authorities in developing an action plan and carrying out technical studies and a business plan for a local one-stop-shop.

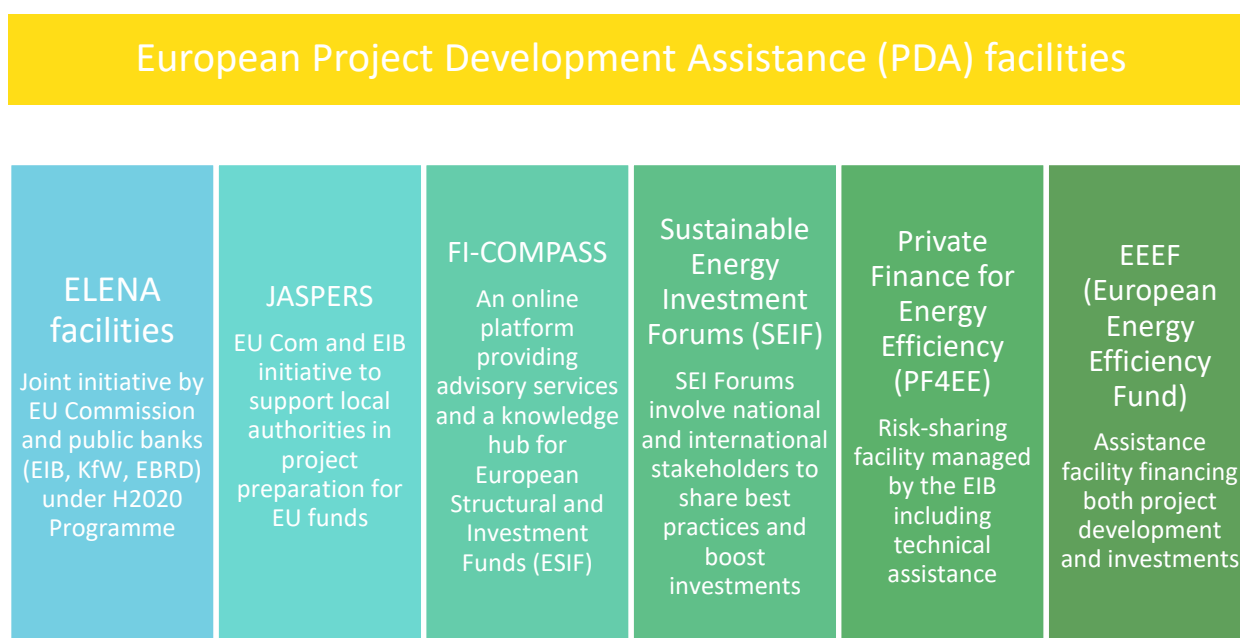
Source: CityInvest (Horizon2020 Project)

In line with the above, on a municipal level the capacities to develop feasibility studies, business plans or technical assessment are often lacking. To support local officers, a central facility could help aggregate project needs from multiple communities or local governments and organise (technical) capacity-building activities.

3.2. Project development assistance facilities

Adding to the EU funding streams and national financial schemes, the EU has set up funding for project assistance facilities, such as technical and legal assistance. The complex application and tender procedure and comprehensive eligibility criteria can sometimes hamper the development of viable projects and thus the implementation of energy saving measures. Additional funding for technical support, capacity building activities and knowledge transfer helps overcome these obstacles.

Figure 3 Overview of EU-funded Project Development Assistance (PDA) facilities



The largest [ELENA](#) facility is managed by the EIB and provides grants for assistance to programmes with over €30 million investment volume and – for energy efficiency projects – with a three-year implementation period. Since its establishment in 2009, it has awarded more than €130 million of EU support leading to an estimated investment of €5 billion in project support. The initiative can cover up to 90% of all technical assistance and project development costs, such as feasibility studies, market studies, programme structuring, business plans, energy audits and financial planning.

In the field of energy efficiency in the building sector, ELENA supports the preparation of projects in public and private buildings and commercial and logistical properties. It also supports the integration of renewable energy sources (e.g. PV installations on rooftops, solar thermal collectors, biomass), as well as renovation and infrastructure investments, such as smart grids or ICT systems.

In 2017 the [Smart Finance for Smart Buildings initiative](#) was established, allocating additional funding to accelerate energy efficiency improvements in the residential sector. The initiative wants to support private homeowners and homeowner associations to prepare and implement renovations works in private and public residential buildings. To convince and motivate homeowners to carry out energy efficiency renovations, the facility provides pre-assessment checks and support for energy performance certificates or energy audits. By supporting project development activities, it enables individuals or housing associations to access financing from financial institutions or schemes. According to the European Commission, the cooperation with EIB can unlock another €10 billion of public and private funds until 2020.

Another programme by the European Commission and the EIB is the Joint Assistance to Support Projects in European Regions ([JASPERS](#)) initiative, established in 2005. The platform provides independent advice to beneficiary countries to help prepare high quality projects to be co-financed under ESI funds. Funding is available for a wide range of activities, including preparation of projects, quality review, capacity building and support for implementation. JASPERS targets assistance on major infrastructure projects, including waste, energy and urban transport. It is free to use for local authorities and scheme promoters.

COMBINATION OF FUNDS

Different funds – for example European Structural and Investment Funds and the European Fund for Strategic Investments – can be combined to optimise the use of public funds and accelerate the implementation of large-scale projects. The two funding sources may cover different risks but have to comply with eligibility criteria and rules on double funding.

The Smart Finance for Smart Buildings initiative wants to further facilitate this possibility by adjusting the financial and legal regulations. By combining EU with national public and private funds, the risk is shared, which makes these financing options more attractive to final beneficiaries.

[Sustainable Energy Investment Forums](#) aim to work with national stakeholders in order to boost large-scale investment and financing for sustainable energy. This is achieved through a series of events across the EU showcasing best practices in developing investment projects and programmes in sustainable energy. These forums seek to establish a fruitful dialogue between all stakeholders involved in delivering investments in sustainable energy, in particular the financial sector and public authorities.

The European Commission has also established [FI-COMPASS](#), a platform for advisory services on financial instruments and knowledge hub for ESIF financial instruments. Its scope includes microfinance under the Programme for Employment and Social Innovation (EaSI). FI-

COMPASS supports ESIF managing authorities and other interested parties through practical know-how and increasing knowledge about the financial instruments that are available to different players.

4. Innovative financial instruments

In addition to the more traditional funding schemes presented above, in the past 10 years more innovative financing instruments and new business models have increasingly driven energy efficiency improvements. Some of these instruments and their market potential are presented below.

4.1. Green bonds

The green bond market emerged in 2007-2008 when multilateral development banks issued the first bonds with the commitment to exclusively finance ‘green’ projects. The private sector joined later in 2013-2014. Green bonds help mobilise green investments by offering investors an informed, explicit decision to invest in green projects. Projects financed by green bonds are mainly within renewable energy, energy efficiency, low carbon transport, sustainable water, and waste and pollution. Green bonds offer an alternative to bank loans and equity financing and can enable long-term financing for large-scale projects.

For the past 10 years the issuance of green bonds has increased rapidly, with around €130 billion issued in 2017, compared to €38 billion in 2015. Despite this growth, green bonds still represent only a small share (around 0.5%) of the global bond market. A 2017 study for the European Commission found some key issues hampering a further uptake of green bonds. These include the lack of green bonds and a green project pipeline, aggregation mechanisms for green projects, a definition and framework for green bonds, information and market knowledge, and a clear risk profile for green investment. The authors call for better awareness of the benefits of green bonds, a platform for planned green investments to support project developments and the mandatory disclosure of green indicators [9].

To improve standards and accelerate the growth of a green bond market, the UK-based [Climate Bond Initiative](#) introduced a labelling scheme to certify green bonds, thereby increasing trust and speeding up project implementation. The [Climate Bonds Standards and Certification Scheme](#) ensures consistency with the Paris Agreement’s 2°C warming limit and provides clear, sector-specific eligibility criteria for assets and projects using green or climate bonds. This standard is one possibility to increase transparency and thus improve trust in green investments.

The German development bank KfW evaluates green bonds as an effective opportunity for municipal finance to fund local infrastructure projects. Green municipal bonds have been issued since 2015 in several front-runner cities across Europe, such as Paris (France), Gothenburg (Sweden), Oslo (Norway) and Hannover (Germany). The purpose of green municipal bonds is to fund municipal projects with a strong environmental or climate mitigation/adaptation benefit. For sustainable infrastructure projects and energy efficiency improvements in public and residential buildings, green municipal bonds can be a source of low-cost capital. Some technical and legal barriers remain, including that issuers have to be credit-worthy and allowed to issue bonds, and the need for high capacities for comprehensive monitoring and reporting mechanisms [10]. Capacity building and improved cooperation between municipal departments could help to track large-scale climate and environmental investment projects.

EXAMPLES OF MUNICIPAL GREEN BONDS

Gothenburg, Sweden - Gothenburg was one of the first cities to issue green bonds. Over the past five years, it issued bonds for US\$2.5 billion, mainly financing urban sustainable transport.

Ile-de-France, France – The Ile-de-France region issued its seventh green bond in 2017 with a volume of €500 million, financing for example the renewal of schools, infrastructure and social housing projects.

Östersund, Sweden – Though the municipality only has 50,000 inhabitants, the authorities issued a green bond of over €80 million in 2017 to finance climate mitigation and adaptation projects, including renewable energies and an electromobility fleet [10].

4.2. On-bill schemes

On-bill financing schemes (OBS), which use utility bills as a repayment method, present another approach to financing energy efficiency solutions and overcoming the reluctance of financial institutions to finance small-scale investments. Though there is a large potential for on-bill schemes in Europe, the majority are in use in the US and Canada, where they have boosted energy efficiency renovations for the past 30 years.

There are different types of on-bill financing schemes, depending on the party that provides the loan or how the efficiency improvement is paid for. The American Council for an Energy-Efficient Economy (ACEEE) differentiates between on-bill financing (OBF), where the utility company represents the lending party, and on-bill repayment (OBR), where the lender is a third party, thereby leveraging private finance. Another variation is the tariffed on-bill (TOB), meaning the energy efficiency measures are financed through a new tariff offered by the utility provider. In this case, the improvements are not financed through a loan, but under the terms of an additional tariff which is tied to the building's meter and not to the homeowner.⁹

The Horizon2020-funded project [RenOnBill](#) (Residential building energy renovations with on-bill financing), launched in September 2019, aims to scale up investment in deep energy renovations in the residential building sector. The consortium will promote the development and implementation of on-bill schemes in four countries – Germany, Italy, Lithuania and Spain – and explore the opportunities and obstacles in replicating the on-bill approach across Europe.

4.3. Revolving funds

Revolving funds are financed by public or private entities providing loans to finance a set of sustainable energy projects. An example is the Energy Fund Utrecht (EFU), a joint initiative between the City of Utrecht and the Province of Utrecht, with an investment volume of €21 million, including €1.25 million

⁹ American Council for an Energy-Efficient Economy. "On-Bill Energy Efficiency" <https://aceee.org/sector/state-policy/toolkit/on-bill-financing>

from the ERDF. A revolving fund usually provides funding for projects or SMEs that would not have access to other types of funding from financial institution as they too risky or too small [8].

The borrower is expected to repay the loan sum at a low interest rate to restock the fund. Often projects with a short payback time are selected, to use the repaid money to finance new projects. By replenishing the next round of investments with the ongoing repayments a “sustainable funding cycle” [11] is established. The Joint European Support for Sustainable Investment in City Areas (JESSICA) facility is an example of European Structural Funds being channelled through revolving funds. The programme provides investments through revolving “urban development funds”, which replenish new urban energy projects with revenues generated from energy savings. JESSICA funds can be used at regional and local level, as long as an independent institution has the capacity to manage the implementation of the fund. A successful example is the [Jessica II Fund for Multi-apartment Building Modernisation](#) in Lithuania building running from 2009-2020 with the aim to renovate multi-apartment buildings by giving out preferential loans.

4.4. Green mortgages

Green – or energy efficient – mortgages are aimed at individual homeowners seeking to improve their building’s energy efficiency or planning to buy a new energy-efficient building. The aim is to motivate borrowers to invest in energy efficiency measures in existing houses or to buy highly energy-efficient buildings by offering low interest rates and increased loan volumes (prospective).

The green mortgage concept aims to increase the contribution of the banking and financial industry to the sustainable energy goals of the EU. Effective cooperation between banks and private homeowners has great potential for financing energy efficiency improvements in the residential sector. The Horizon2020-funded initiative [EeMAP](#) (Energy efficient Mortgage Action Plan) aims to set up a standardised process and a network for energy efficient mortgages across Europe. Barriers to the wide implementation of energy efficient mortgages are the diverse building stock across the EU and access to reliable building data.

5. Recommendations

Before designing a funding scheme, it is important to put in place the overall policy framework and make sure that the funding scheme is part of long-term plans and strategies, such as the LTRS. This will allow for a consistent design and timing of the financing instruments.

Design target-specific financing instruments

Designing successful financing schemes to improve the energy performance of buildings requires a thorough analysis of the status quo, well-defined target-setting and a barrier analysis covering financial, market, political, legal, behavioural, as well as technical barriers to investing in energy renovation. A ranking of barriers and an overview of good practices to address the most important barriers is a good starting point to develop a financing instrument. Practical support, the development of bankable projects, user guidance and trainings as well as support for tender procedures and complex application processes should be integrated in the design of funding programmes.

- Create and/or maintain a comprehensive overview on the building stock (comparable, relevant and comprehensive data)
- Map barriers and analyse applicability of good practice
- Combine financial support with other schemes such as coupling with advice

Support access to financing

Proactive marketing and communication tailored to potential beneficiaries is key to making funding more accessible.

- Define trigger points as entry points for additional renovation investments, and potentially to provide information on accessible funding mechanisms
- Promote co-benefits of energy renovation (e.g. alleviating fuel poverty, increasing the overall value of the building, improved comfort, etc.) as an entry point for deep energy renovation.
- Develop guidance on how to access funding for your specific target group
- Make use of standardised procedures and pooling of projects. One stop shops are examples of how to bundle projects and simplify the value chain.

Ensure effectiveness

It is highly recommended to encourage deep renovation that matches long-term targets for the building sector in line with European goals of decarbonising the building stock by 2050. This will minimise the risks of technological lock-ins and the need to invest in the same building several times and thus in an uneconomical way.

- Ensure high quality renovation – couple support to minimum performance requirements
- Make use of EPCs as a data source and possibly couple financing to a certain building efficiency classes (preferably couple financing to a building renovation passport)
- Provide for a monitoring scheme to make sure data is collected and success is looked after.

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