Dedicated to stimulate demand for sustainable energy skills in the construction sector

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Report:	**D.3.4 Initial guide on Financial Mechanisms (1ST draft – reduced version)**
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CHANGE RECORDS

Version	Date	Author	Changes
Version 0	Jan. 2021	IVE	Index
Version 1	Feb. 2021	IVE	Reduced version provided + questionnaire to be filled in by partners
Version 2	March / April 2021	IGBC	Questionnaire filled in
Version 2	March / April 2021	ISSO	Questionnaire filled in
Version 2	March / April 2021	AEA	Questionnaire filled in
Version 2	March / April 2021	EnE	Questionnaire filled in
Version 2	March / April 2021	AVE	Questionnaire filled in
Version 2	June 2021	IGBC	More info provided
Version 2	June 2021	ISSO	More info provided
Version 2	June 2021	AVE	More info provided
Version 3	July 2021	IVE	Full version
Version 3.1	August 2021	EnE	More info provided
Version 4	August 2021	IVE	Full version + feedback consolidation
Version 4	August 2021	ISSO	Final quality control and submission

SUMMARY

This document focuses on collecting and analysing the existing financial mechanisms that encourage the use of skilled workers in home/building renovations.

This compilation will serve as a guide for public authorities and financial institutions and other involved stakeholders in the construction sector on how to apply such mechanisms with the objective of increase the demand of skilled professionals.

This document is focused on analysing those financing mechanisms that improve their conditions based on the training and preparation of the professionals who carry out the construction or renovation project. However, in addition to financing improving, which can undoubtedly be effective, there are other formulas that allow motivating the different agents in the construction or renovation value chain by reducing costs, which will also be analysed.

As a first step, a deep analysis of the available related literature was made, allowing to collect several examples and good practices of existing mechanism already applied all over the word. Secondly, in order to compile as much information as possible, the partners were asked to contribute with local or national experiences and case studies. For this, in a first loop of contributions, a draft of the report was shared accompanied by a questionnaire with the following questions:

- Do you know of any other financial mechanisms that should be added to this Guide?
- Do you know of any other example in which skilled professionals has been taken into account?
- Most of the examples in this Guide have taken into account skilled professionals as a requirement, but could you expand the information in detail on any of the examples?
- Which financial institutions and public bodies could you contact to share the contents of this initial guide (D3.4) and the future final guide (D3.5)?
- Do you consider it feasible to reach an agreement with any of these financial institutions or public bodies to include the EE-skilled professionals requirement in one of their financial products or formulas? (letter of intent)

From the filled in questionnaires, the most relevant information was filtered and partners were asked to expand those cases considered as better examples. Thus, the final version of this report is structured in two main chapters:

- Approach to the financial mechanisms available in the market accompanied by a brief description.
- Examples of the application of financial mechanisms where skilled professionals have been valued.

These examples will inspire partners who should assess the viability of their adaptation to regional / national contexts and even contact financial bodies and public authorities to promote the launch of financial mechanisms that award the hiring of EE-skilled professionals since this implies better economic conditions.

Once this deliverable is launched and partners are able to study the different possibilities for the encouragement of skilled workers through financial mechanisms a new version will be produced including the approach to be followed by every partner to improve the existing mechanisms in their areas or propose new ones that include BUSLeague recommendations.

1 INTRODUCTION

The Energy Efficiency Directive (Directive 2012/27/EU, the EED), adopted in 2012, laid down the foundation for actions to be taken in order to accelerate energy efficiency upgrades in different sectors. It, inter-alia, required EU Member States (MS) to establish a long-term strategy for mobilising investments in their national stock of residential and commercial buildings, both public and private. Specific provisions on central government under EED Article 5 and the establishment of national funds on energy efficiency under EED Article 20 were additional requirements, which were expected to stimulate the energy renovation market. By way of amending Directive (EU) 2018/844, provisions on long-term renovation strategies have been moved from Article 4 of the EED to a new Article 2a in the EPBD and have also been strengthened. The updated "Energy Performance Building Directive, EPBD" calls for financial mechanisms to be actively promoted by Member States and for the mobilisation of financial institutions for energy efficiency renovations in buildings. Such measures may include the establishment of energy efficient mortgages, promotion of energy efficiency investments in public buildings through public-private partnerships and uptake of energy performance[1]. In addition, concerns on the perceived risk of the investments can be addressed through, inter-alia, the set-up of accessible and transparent advisory tools and establishment of one-stop-shops that provide integrated energy renovation services[2].

[1] EEFIG (2015) Energy Efficiency - the first fuel for the EU Economy. How to drive new finance for energy efficiency investments, Energy Efficiency Financial Institutions Group.
[2] Boza-Kiss, B. and Bertoldi, P. (2018) One-stop-shops for energy renovations of buildings - case studies. Ispra: European Commission,. Available at: https://ec.europa.eu/jrc

2 FINANCIAL MECHANISMS

Various private and public financial mechanisms for energy renovations in buildings are currently available in Europe in the form of non-repayable rewards, debt financing, equity financing or a combination of these options[3]. They can range from well-established and traditional mechanisms such as grants, subsidies and loans to emerging and new models not yet well tested in the European market such as crowdfunding and on-bill finance models. For illustrative purposes, these have been organised according to the source of financing.

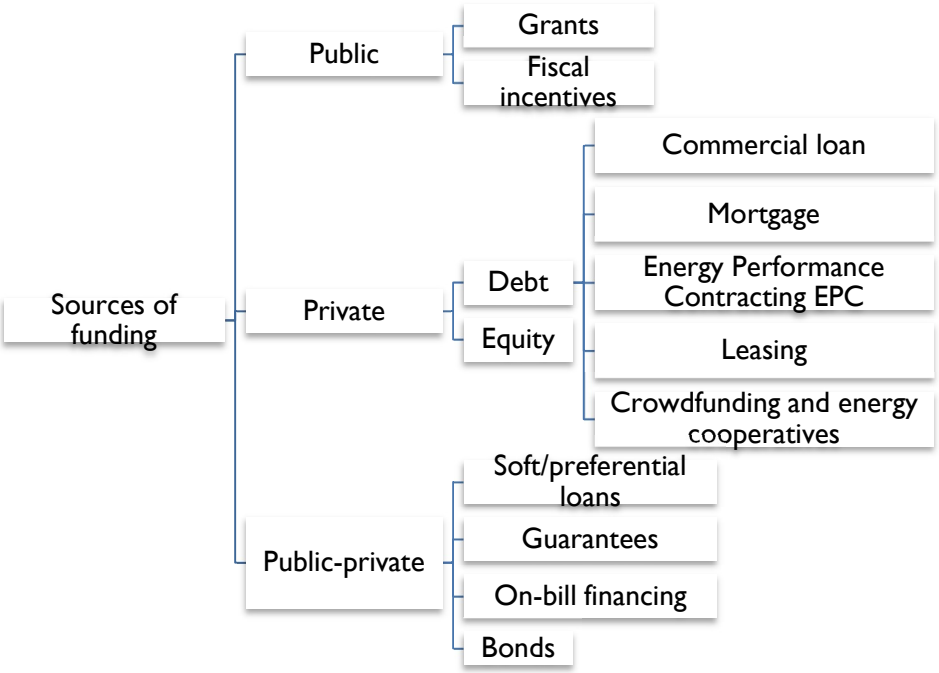

Fig 1: Sources of funding

2.1 Public funding

2.1.1 Grants

Grants (investment grants or interest rate subsidies) are economic incentives provided by governments to support the upfront cost of energy efficiency projects that may entail too high investment costs and long amortisation periods. Grants are one of the most common forms of financing for sustainable energy projects where technologies are pre-commercial or in the early stages of commercial deployment or are otherwise prohibitively expensive.

A grant will cover 100% or only part of the total cost and usual requires some form of co-financing. Target recipients and measures can be defined using eligibility criteria.

The grant intensity (subsidy level) may vary with the following parameters[4]:

- energy performance: e.g. subsidy is linked to amount of energy or costs saved meaning more support is provided for more ambitious projects;

[3] Maio, J., Zinetti, S. and Janssen, R. (2012) 'Energy Efficiency Policies in Buildings- the Use of Financial Instruments at Member State Level', pp. 1–44.

[4] Economidou, M., Todeschi, V., Bertoldi, P., Accelerating energy renovation investments in buildings. Financial and fiscal instruments across the EU, 2019, JRC

- household income: more favourable conditions may apply for low-income households or customers subject to fuel poverty;
- specific target group: e.g. condominiums or rented properties may have access to higher grant intensity;
- intervention measure: e.g. some harder-to-implement interventions such as insulation may be associated with higher intensity;
- innovativeness of technology: new and emerging technologies may receive more support to help their entry to the market.

Grants can be combined with other financing mechanisms, such as preferential loan schemes, to incentivise the uptake of measures that are less likely to be selected because they have longer pay-back times.

Grants and subsidies may be managed directly through a national administration or, if combined with preferential loans, through a dedicated fund[5].

Examples (see chapter 3.1 for further information)

Example The Home Upgrade Grant (HUG) in the UK

Example SEAI heat pump system grant in Ireland

Example BBC label and RGE quality label in France

Example Ma PrimeRénov in France

Example The Renewable Heat Premium Payment (RHPP) in the UK

Example Residential Energy Efficiency Credit Line (REECL), Bulgaria

Example klimaaktiv Programme Austria

Example Warmer Homes Scotland Scheme

2.1.2 Fiscal incentives

Fiscal measures aim to encourage actors to implement more energy-efficient investments. The government seeks to promote energy efficient use by providing fiscal schemes through tax reduction/exemption and tax credit[6].

Taxation can be a powerful tool to stimulate energy efficiency by giving incentives to invest in such projects through tax exemptions and through incentive regimes related to e.g. capital gain tax, property tax, VAT and accelerated or free depreciation[7].

Tax allowances are used, for instance, in the case of income tax deductions for investments in defined energy efficiency measures (e.g. insulation). They have the effect of a direct grant, but are administered via income tax declarations, without special grant applications. Accelerated depreciation on investments in specified equipment, allows companies investing in energy saving technologies to depreciate it at a faster rate, entailing lower corporate tax. [8]

Another form of tax allowance is the tax credit, whereby in addition to normal rules for tax allowance, a percentage of the investment cost of approved technologies can be used to offset corporate profit taxes. Exemptions of reduced rates of taxation on corporate profits are occasionally given to environmentally friendly activities. Denmark and the Netherlands use tax

[5] Financing the energy renovation of buildings with Cohesion Policy funding. https://ec.europa.eu/regional_policy/en/information/publications/guides/2014/financing-the-energy-renovation-of-buildings-with-cohesion-policy-funding

[6] BPIE, Financing energy efficiency (EE) in buildings https://www.bpie.eu/publication/financing-energy-efficiency-ee-in-buildings/

[7] T'Serclaes, P., Financing Energy Efficient Homes. Existing Policy Responses to Financial Barriers., in IEA information paper OECD/IEA, Editor. 2007, OECD/IEA: Paris.

[8] Rezessy, S., Bertoldi, P., Financing energy efficiency: forging the link between financing and project implementation, Joint Research Centre of the European Commission (2010), http://ec.europa.eu/energy/efficiency/doc/financing_energy_efficiency.pdf

credits to encourage energy audits; France and Italy have established tax credits as a policy to promote EE. A tax relief offers a reduction in the amount of income tax payable.[8]

A regime of differentiated VAT may function either to encourage or to discourage efficiency improvements. For instance, in some countries VAT on district heating (DH), natural gas and electricity may be reduced, while VAT on efficiency equipment and/or services may not be reduced, which has a negative impact on project economics (e.g. Hungary, Slovakia). In other cases VAT for environmentally friendly products and goods related to energy savings have been reduced (e.g. Czech Republic).[8]

Under certain conditions property tax regimes can demotivate owners from refurbishing their homes – in Sweden the calculation of the property tax is based on five categories, one of which is energy efficiency, so the better the performance of the property, the higher the property tax. In France the tax is calculated on the potential revenue in case the property is rented. On the contrary, in the Czech Republic house owners can get a real estate tax relief for five years if they reconstruct their heating system, switching from solid fuels to gas or RES and in Bulgaria high efficiency residential buildings get a temporary exemption from property tax.[8]

Examples (see chapter 3.2 for further information)

Example Superbonus Italy

Example Existing Buildings Programmes France

2.2 Private funding

2.2.1 Commercial loan

The most common EE financial product is a loan directly to the energy end-user (owner of the premises). A basic loan is the simplest form of debt: it is an agreement to lend a principal sum for a fixed period of time, to be repaid by a certain date and with an interest calculated as percentage of the principal sum per year and other transaction costs (e.g. administration fees).[8]

Consumer loans offered by commercial banks used to be too expensive, usually combining high interest rates and short maturity periods (e.g. the loan must be reimbursed within 5 – 10 years). Cities and regions in cooperation with local financing institutions can help to overcome these shortcomings by developing soft loans (see 2.3 Public-private funding

Soft/preferential loans) that are tailor-made for the needs of citizens in their respective territories. [9]

Recently there has been a change in trend in this type of product, with banks and consultancies offering consumer loans with better conditions, adapted to market needs. For example, there are products that are offered to the owner association managing a multiple ownership building, not being necessary a natural person the loan recipient, which greatly facilitates the management in timeshare conditions.

Examples (see chapter 3.3 for further information)

Example Deutsche Bank Owners association (communities) loans Spain

Example Condominium Financing (Finanziamento Condominio) Italy

2.2.2 Mortgage

An energy mortgage is a mortgage that credits a home's energy efficiency in the home loan. For an energy efficient home, for example, it could mean giving the home buyer the ability to buy a higher quality home because of the lower monthly costs of heating and cooling the

[9]Energy Cities, Infinite Solutions Guidebook - Financing the energy renovation of residential buildings through soft loans and third-party investment schemes.

home. For homes in which the energy efficiency can be improved, this concept allows the money saved in monthly utility bills to finance energy improvements. There are two types of energy mortgages:

- Energy Improvement Mortgage (EIM) - finances the energy upgrades of an existing home in the mortgage loan using monthly energy savings.
- Energy Efficient Mortgage (EEM) - uses the energy savings from a new energy efficient home to increase the home buying power of consumers and capitalizes the energy savings in the appraisal.

Essentially, an EEM is a reduced rate mortgage that credits the energy efficiency of the building in the mortgage itself. To get an EEM a borrower typically has to have energy rating conducted before financing is approved. This verifies to the lender that the building is energy efficient. In the United States EEMs are typically used to purchase a new home that is already energy efficient, such as Energy Star qualified one.

An EIM is used to purchase existing homes that will have an energy efficiency improvement made. EIMs allow borrowers to include the cost of energy efficiency improvement in the mortgage without increasing the down payment. EIMs allow borrowers to use the money saved in utility bills to finance energy improvements. In the US both EEMs and EIMs require a home energy rating (building certification) to provide the lender with the estimated monthly energy savings and the value of the energy efficiency measures.

Examples (see chapter 3.4 for further information)

Example Green Financing Scheme in the Netherlands

Example FHA's Energy Efficient Mortgage program (EEM) USA

Example Green mortgage co-developed by RoGBC with leading regional banks, Romania

2.2.3 Energy Performance Contracting EPC

An energy performance contracting (EPC) arrangement is an integrated contract in which a contracting partner (such as an Energy Service Company – ESCO) designs and implements energy conservation measures with a guaranteed level of energy performance for the duration of the contract. The energy savings are used to repay the upfront investment costs, after which the contract usually ends.

An EPC can be arranged with the ESCO borrowing from banks or investors in order to finance the investment. In such a case, in order to reduce its balance sheet debt, the ESCO may sell future payment streams to a bank in a process called forfeiting.

Forfeiting typically refers to a financial arrangement between an ESCO and a bank that can provide immediate cash flow to support project implementation. Forfeiting can be used when an ESCO is in an energy performance contract (EPC) arrangement with an end-user and the ESCO sells future receivables (e.g. the end-user payments) to the bank. The bank then assumes the credit risk, in return for a discounted one-time payment.[8] The ESCO provides a performance guarantee, as dictated by the Energy Services Agreement, while the end-user pays fixed monthly payment to the bank. The technology installed is owned by the ESCO and can be used as collateral. A separate Maintenance Agreement between the ESCO and the end-user ensures that the ESCO performs maintenance of the system and the end-user pays fixed monthly payment in return for this service. Due to high transaction costs, forfeiting has been used for large scale projects. It is also suitable in situations where the end-user has a better creditworthiness than the ESCO[5].

In the case of EPC with owner finance, the contractual arrangement between the ESCO and the building owner regarding measure implementation and guaranteed energy performance levels can be the same as for EPC with ESCO finance. The difference is that the building owner provides the money required for the investment (from their own funds or a loan provided by a bank)[5].

2.2.4 Leasing

Leasing is a way of obtaining the right to use an asset (rather than the possession of this asset). In many markets finance leasing can be used for EE equipment, even when the equipment lacks collateral value. Leasing companies, often bank subsidiaries, have experience with vendor finance programs and other forms of equipment finance that are analogous to EE[10].

From the lessee's standpoint, there are essentially two main types of leases: capital lease and operating lease. Under a capital lease a lessee is required to show the leased equipment as an asset and the present value of lease payments as debt on its balance sheet. Operating leases are not capitalized on a company's balance sheet and lease payments are treated as an expense for accounting purposes[11]. The period of contract is less than the life of the equipment and the lessor (investor) pays all maintenance and servicing costs.[8]

2.2.5 Crowdfunding and energy cooperatives

Crowdfunding is a term used to describe the collective effort made by a large number of individuals (investors) with the aim to pool funds together and support a project, cause, business idea or loan initiated by other people or organizations through an online web-based platform [12]. With annual growth rates exceeding 100%, crowdfunding has expanded exponentially over the last years, attracting the interest of professional financial institutions, institutional investors, venture capitalists and angel investors.

Investments in energy efficiency and renewable energy projects through crowdfunding have also gained some popularity, even though they currently account only for a considerably small share of the sector. While the two largest crowdfunding platforms Kickstarter and Indiegogo focus on innovations in consumer products such as energy management or small scale renewable energy generation systems, new platforms are designed to give funders the opportunity to provide capital in exchange for equity or future return on investments in energy efficiency and/or renewable projects. The fastest growth of crowdfunding platforms in this area is linked to renewable energy projects. Few other crowdfunding platforms have started supporting energy efficiency projects, such as Bettervest, ECONEERS and CitizenEnergy but most platforms cover both energy efficiency and renewable energy projects.

Crowdfunding uses a wide range of models. There are 4 different types of models supported by crowdfunding: donation crowdfunding, reward crowdfunding, debt (peer-topeer lending) and equity crowd-funding. For energy efficient projects, debt (peer-to-peer lending) is the most common type which involves requesting support and resources from other investors to meet a certain crowd-investment target in exchange for interest. The size of the crowd-investment target can range from very small (e.g. a few hundreds) to several hundred thousands or more. Crowdfunding for energy efficiency can be used when there is a lack of affordable financing or high upfront costs for implementing or scaling up cost-effective energy efficiency measures, e.g. in commercial buildings. Crowdfunding removes the involvement of financial institutions and helps projects get off the ground with the help of crowd investors, who then expect return on their investment through interest payments or equity. In addition, crowdfunding can lead to better awareness and support for energy efficiency projects, and offer market outreach and validation for new energy efficiency technologies. With the help of the internet, crowdfunding can draw support from people across entire countries and increasingly internationally.

Energy cooperatives, on the other hand, rely on members in local communities to group together and support projects that would be difficult to get started otherwise. Energy

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[10] MacLean, J., Mainstreaming Environmental finance Markets (I), 2008, Energy Efficiency Finance Corp.
[11] Hassett, T. and K. Borgerson, Harnessing nature's power. Deploying and financing on-site renewable energy, 2009, World Resources Institute
[12] Ordanini, A. et al. (2011) 'Crowd-funding: transforming customers into investors through innovative service platforms', Journal of Service Management, 22(4), pp. 443–470.

cooperatives can cover small districts, entire cities, regions or even operate a variety of projects on a national level. Several energy cooperatives focusing on renewable energy exist in Europe, many of which are hosted on the website of REScoop.eu, the European federation of renewable energy cooperatives. The main difference between energy cooperatives and crowdfunding lies in the fact that crowdfunding platforms may have multiple different projects in different countries and offer various types of participation as discussed above, while energy cooperatives are single organisations typically raising money to fund their own projects. Increasingly though, the lines are becoming blurred: cooperatives can make their own investment offers or can even make use of crowdfunding platforms to fund part of their goals. Ultimately, both cooperatives and crowdfunding take advantage of support from individual members of the public to get projects up and running.

2.2.6 Equity

Equity financing refers to the acquisition of funds by issuing shares of common or preferred stock in anticipation of income from dividends and capital gain as the value of stock rises. It also sometimes refers to the acquisition of equity in private unlisted companies or start-up companies.[8]

Equity is the residual claim or interest of the most junior class of investors in an asset, after all liabilities are paid: ownership equity is the last (residual) claim against assets, paid only after all other creditors are paid. Ownership equity is also known as risk capital or liable capital. The equity held by private individuals is often held via mutual funds or other forms of pooled investment vehicles: unless the sponsor is a large company, this equity is typically supplied by private equity funds.[8]

While private equity funds are not very typical in energy efficiency, equity financing can come from professional venture capitalists to cover this sector. Venture capital (VC) is a specific sub-segment of private equity investment, which entails investing in start-up companies with strong growth potential; private equity entails investment in the expansion and growth of any company that is not listed on a public stock exchange. VC investors obtain equity shares in the companies that provide EE goods or services and generally play a significant role in the management and technical aspects of the company.[8]

Private equity is essential for growing businesses that want to expand their activities, as well as for large-scale project developers. Several public agencies and funds have developed finance mechanisms that provide equity investment opportunities for sustainable energy businesses and projects, often leveraging large amounts of investment from other private financing sources.[13]

With respect to energy efficiency businesses, equity investment can take the form of an ESCO issuing additional shares in the company's common ownership. The issuance of shares gives the investor a right to any proceeds that may result from a distribution of dividends to the owners or cash proceeds from any sales of the assets of the company after the satisfaction of any outstanding liabilities.[14]

[13] SEF Alliance, The UNEP-SEFI Public Finance Alliance. A document to support the establishment of an international platform for managers of public and publicly backed funds dedicated to building sustainable energy markets. 2008, BASE: Basel

[14] Makinson, S., Public Finance Mechanisms to Increase Investment in energy efficiency, 2006, Basel Agency for Sustainable energy

2.3 Public-private funding

2.3.1 Soft/preferential loans

A soft loan or preferential is a loan that is given with a very low interest rate, below the market rate. In most cases, soft loans are handed out by governments for projects that fall under a priority policy or measure to be implemented.

Soft loans can also include other advantages such as[9]:

- ✓ Longer maturity which allows homeowners to adjust the amount of monthly loan repayments according to their financial resources and, ideally, to take into account the financial savings achieved thanks to energy savings.
- ✓ A longer grace period, which gives homeowners an opportunity to accumulate financial savings through lower energy bills and start to reimburse the loan at a later stage.
- ✓ Lower administrative and insurance costs or zero early repayment costs.

The basic principle of soft loans is to enable homeowners to borrow money to carry out energy-efficient renovation work in their homes at lower interest rates than standard market conditions.

A dedicated system of preferential loans might be implemented through:

- Selected commercial banks delivering loans.
- A revolving fund managed by a third party.
- A fund managed by the EIB or a national energy agency.

Loan conditions include[8]:

- extended payback periods,
- low or zero interest rates,
- short-term interest deferral periods, and/or
- inclusion of payback grace periods.

Preferential loans may target only the envelope or a specific technology, most support a mixture of measures and technologies that have been previously selected following specific criteria[5].

Examples (see chapter 3.5 for further information)

Example HBFI Green loan in Ireland

Example "L'éco-prêt à taux zéro" in France

Example JESSICA Holding Fund in Lithuania

Example KfW Programme: "Energy Efficient Construction and Refurbishment", Germany

Example Livret de Développement Durable, France

Example Stuttgart, Germany

Example Bordeaux Metropole, France

2.3.2 Guarantees

Guarantees are a type of risk sharing mechanism where the guarantor (e.g. a public body) assumes a debt obligation should a borrower default. For limited or partial guarantees the guarantor is only liable for part of the outstanding balance at the time of default, usually defined as a fixed percentage.[5]

A loan guarantee is often used to help small and medium sized companies fulfil their loan obligations and invest in construction projects where they would otherwise be reluctant to. In other words, a loan guarantee is a promise by the guarantor to assume the debt of a borrower if the borrower defaults. In many cases, it is the government who will assume a private debt, this is done to boost the market for small borrowers as mentioned above and to promote investment in a certain market sector. This loan guarantee functions as the lenders' insurance

of default or unforeseen delay for technologies that may have a difficult time getting off the ground.

Examples (see chapter 3.6 for further information)

Example KredEX fund, Estonia: Ensuring the quality of the works or equipment[15]

2.3.3 On-bill financing

A scheme which is successfully implemented in the USA is represented by "on-bill energy efficiency", which is a method of financing energy efficiency improvements that uses the utility bill as the repayment vehicle[16].

Integrating loan payments with energy bills and allowing utilities to cut off energy supply to defaulting customers has the potential to both lower collection costs and enhance credit quality of the financing scheme, thereby lowering financing costs[17]. Payment via utility bill reduces risk of credit default and lowers collection risk[8].

Examples (see chapter 3.7 for further information)

Example USA – Clean Energy Works Program (CWEP)

2.3.4 Green Bonds

Bonds are tradable debt securities with repayment terms contractually set at issuance. This includes, for example, their maturity, interest rate, coupon, etc.

The term "green bonds" applies to bonds aimed at financing investments with an environmental benefit or a focus on reducing vulnerability to environmental changes. This definition also includes bonds known as "climate bonds", which focus on investments relating to mitigating or adapting to climate change.

Green bonds differ from "conventional" bonds as they are generally subject to a monitoring system to track whether the funds raised have indeed enabled the initiatives expected to be financed. Using green bonds rather than conventional bonds enables the issuer to broaden their funding base by gaining access to "Socially Responsible Investors" (SRI), who include a broad range of non-economic criteria, including social, environmental and governance, in their investment choices[18].

Examples (see chapter 3.8 for further information)

Example Green Municipal Bonds in France

2.4 Other mechanisms that promote the quality in the Sustainable renovations and involve the use of skilled professionals

2.4.1 Certification and pre-selection of contractors[5]

Certification schemes can ensure that programme resources support high quality installations.

Certification schemes present an effective mechanism for ensuring the quality of equipment and workmanship. Such schemes ensure that only equipment meeting specified standards of quality and efficiency is eligible for support. Energy auditors and equipment installers can also

[15] http://www.kredex.ee/en/
[16] ACEEE. https://www.aceee.org/toolkit/2020/02/bill-energy-efficiency
[17] Ligot, J., A survey of mechanisms and sources of financing for energy efficiency and renewable energy investment for climate change mitigation., 2009, UNECE: Geneva.
[18] I4CE Institute for Climate Economics https://www.i4ce.org/

be covered by such schemes as a way of ensuring that suitably qualified individuals participate in the programme.

Appropriate sizing of SE equipment and the quality of installation can have a significant impact on the level of performance and the EE improvements seen in practice. The objective of such schemes is therefore to make sure that the most appropriate package of measures is identified and that it is installed correctly.

Pre - selecting contractors can be an effective way to ensure quality of works and to reduce administrative burden.

The programme management can elect to conduct a single tendering exercise, on the basis of which a pool of approved contractors can be identified and made available to participating projects. By placing the requirement on projects funded through the programme to use these approved contractors, the programme can help ensure that all work meets pre - defined quality standards. In addition, individual project managers do not need to individually conduct potentially burdensome open tendering and contractor selection exercises. This can be of particular benefit to smaller project activities.

2.4.2 Technical assistance

The European Commission set up a series of facilities funding Project Development Assistance (PDA) to support public authorities and bodies in developing bankable sustainable energy projects. The European Local Energy Assistance (ELENA) facility, a joint initiative by the EIB and the European Commission under the Horizon 2020 programme, provided grants for technical assistance on the implementation of energy efficiency, distributed renewable energy and urban transport programmes. Established in 2009, the ELENA facility has awarded more than EUR 130 million of EU support triggering an estimated investment of around EUR 5 000 million on the ground. ELENA supports programmes above EUR 30 million with a three-year implementation period for energy efficiency and four-year for urban transport and mobility. It can cover up to 90% of technical assistance/project development costs. The main objective of ELENA is to help private individuals and homeowner associations prepare and implement energy renovations in private and public residential buildings[4].

2.4.3 Energy efficiency insurance

Energy efficiency (or energy savings) insurance is an innovative product in which policies protect the installer or owner of an energy efficiency project from under-achievement of predicted energy savings. One of the main barriers of the energy efficiency investments in buildings is the uncertainty associated with risks in terms of the assets installed, the revenues resulting from the project, and the energy savings generated. Specialised insurance solutions are useful to scaling up energy efficiency investments and to remove these uncertainties. Insurance companies also facilitate the flow of financing for these technology solutions and address the untapped market potential. Leading insurance companies have been developing specialised solutions in order to transfer risks from client to the insurance company. The main specialised energy efficiency insurance products and services are shown below:

1 Energy Performance Guarantee (EPG): EPGs cover the financial risk when energy efficiency improvements do not lead to projected levels of energy savings. EPGs can cover performance risks and/or technology risks.

2 Energy Efficiency (EE) services: Insurance companies offer EE services to existing and new clients such as technical assistance, advisory services, and business development, in order to exploit their existing relationships.

3 Add-on coverage: Insurance companies offer their clients add-ons that extend the coverage of existing insurance policies to take into account value increases resulting from EE investments.

Services and products are offered to energy efficiency stakeholders, from manufacturers of technology solutions to ESCOs, project hosts and project sponsors[4].

2.4.4 Supporting development of local SE supply chain

Depending on the scope of a programme and its particular objectives, certain activities can be undertaken to support the development of the local SE supply chain. Actively involving local supply chain stakeholders can help maximise its impact in terms of generating local jobs and establishing a skills base that can support SE activities in the future, beyond the life of the original programme.

Working within the framework of EU state aid and competition rules, activities can include engaging local businesses through communication events, directing support to raise awareness, developing skills and building networks. This can take the form of workshops, seminars, support for local apprenticeships, training courses as well as development of an online community. For example, under the Green Deal Pioneer Places fund in the UK, Local Authorities were awarded funding to help develop a strong network of approved assessors and installers, linking where appropriate with local training colleges.

Example "Duurzame vraag? Dito aanbod!" Ghent, Belgium

The city of Ghent has launched the project "Sustainable demand? Meet sustainable supply!" to meet the demand of the household sectors with a better offer from the construction sector. The project was initially funded through ERDF funds for a period of four years. It was so successful that it has been prolonged with the city's own funds while most of the services provided are still for free.

The main scope of the project is to provide on the one hand **free technical assistance** to households for the selection of adequate EE measures. On the other hand, it provides **continuous training to building companies** to ensure the best and most recent techniques are used. The team in charge of the projects has developed contacts with the business sector in the field (contractors, suppliers, industry representatives etc.) to foster knowledge sharing and the establishment of sustainable supply models.

3 EXAMPLES

3.1 GRANTS

3.1.1 The Home Upgrade Grant (HUG) in the UK

In the UK, the forthcoming Home Upgrade Grant (HUG) will likewise adopt the PAS 2035 that was published as a code of practice for home retrofits in 2019.

PAS 2035 specifies that all domestic retrofit projects will need to use an Accredited Retrofit Coordinator. It also stipulates that all Retrofit Coordinators must hold the Level 5 Diploma in Retrofit Coordination and Risk Management before they can join one of the TrustMark-approved Schemes. The Coordinator role is primarily designed to identify, assess, and manage the technical and process risks commonly associated with domestic retrofit projects. PAS 2035 requires Retrofit Coordinators to define projects as low, medium, or high-risk dependent upon what measures are selected. Most deep retrofits fall into the medium or high-risk categories. See this table for further information on the types of professionals PAS 2035 says should be involved in each stage of the process.

From June 2021, the Energy Company Obligation (ECO) sector will have to comply with the Standard in full. Other new government schemes such as the £750m Local Authority Delivery Scheme (LADs) and Social Housing Decarbonisation Fund (SHDF) also require full compliance.

3.1.2 SEAI heat pump grant system in Ireland

In Ireland, before applying for a heat pump system grant – funded by the Sustainable Energy Authority of Ireland (SEAI), homeowners must engage an independent, SEAI Registered Technical Advisor. The Technical Advisor is responsible for carrying out a technical assessment of a home, and will advise the homeowner on what steps to take to make their home "heat pump ready", i.e. to reduce the heat loss in your home. They provide homeowners with independent guidance on measures necessary to ensure that the dwelling fabric heat loss is lowered to an acceptable level for a heat pump system to perform effectively and efficiently.

Technical Advisor are registered building energy assessor (EPC assessors) who have completed the additional training provided by SEAI and have a suitable construction related qualification or are a member of a professional body such as the Royal Irish Architects Institute (RIAI), Engineers Ireland, the Society of Chartered Surveyors Ireland or the Chartered Institute of Building (CIOB).

3.1.3 BBC label and RGE quality label in 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, property owners 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 a professional holding the **"Reconnue Garante de l'Environnement (RGE quality label)"** must carry out the work.

3.1.4 Ma PrimeRénov in France

Ma PrimeRénov is a building energy renovation aid extended to all French households since January, 2021 in the scope of the government's economic restart plan. Introduced in 2020 in its limited version, the plan sets out to simplify aid measures and universalize energy renovation.

Ma PrimeRénov is open to all households and to landlords and syndics of co-ownership flats. Although all households are eligible, the level of support is on a sliding scale related to income and energy performance. The grant is only available if the property is your principal home.

The **work must also be carried out by an accredited builder (Reconnue Garante de l'Environnement - RGE)** and to a minimum level of energy performance. The grant is paid on completion of the works, although interim payments are sometimes possible.

The list of eligible works does change each year, as does the level of assistance. The grant available for double glazing has been reduced drastically over the past couple of years, and since July so has the amount for external insulation, both of which are substantially below the cost of such works.

A summary of the most common eligible types of work is shown below:

- High energy performance gas boiler
- Automatically fed boiler using wood/biomass
- Manually fed boiler using wood/biomass
- Log wood burner for space/water heating/cooking
- Pellet wood burner for space/water heating/cooking
- Wood/pellet closed hearth (insert)
- Solar energy space heating
- Solar energy water heating
- Hybrid thermal/solar for space/water heating
- Geothermal or solar heat pump
- Air-to-water heat pump
- Removal of an oil tank
- Energy audit
- Double glazing
- External wall insulation
- Internal wall insulation
- Roof insulation

Ma PrimeRénov does not fund the whole of the works. Nevertheless, it is available with other forms of assistance, such as Certificat Économies d'Énergie (CEE) and an interest free loan called the "Eco-prêt à taux zero".

Applicants are strongly recommended to discuss their plans with one of the **free government energy advisors at 'FAIRE'** (Faciliter, Accompagner et Informer pour la Rénovation Énergétique). Applicants can find an accredited builder from the FAIRE website at "Trouver un Professionel".

3.1.5 The Renewable Heat Premium Payment (RHPP) in the UK

The Renewable Heat Premium Payment (RHPP) in the UK was a grant scheme designed to increase the use of renewable heat technology (biomass boilers, solar thermal, and ground and air source heat pumps) in the domestic sector (including social landlords). Installations of certified technologies by **certified installers** were eligible for a grant that represents approximately 10% of the installed cost. Eligibility for most technologies is restricted to rural households that are not connected to the gas grid, thereby maximising the carbon savings associated with the scheme.[19]

[19] https://www.gov.uk/guidance/renewable-heat-premium-payment-scheme

3.1.6 *Residential Energy Efficiency Credit Line (REECL), Bulgaria*[20]

The main financial mechanisms in the REECL programme are low interest rate loans and grants. The programme was launched in October 2005 and offers a 'one-stop shop' financing vehicle including:

- Loan financing from participating commercial banks;
- Incentive grant support (in conjunction with the loans), paid through participating banks upon completion and verification of individual projects; and
- Technical assistance.

REECL finances implementation of advanced energy efficiency techniques in the private housing sector. Eligible borrowers are:

- Homeowners living in family houses and apartments;
- Formally registered housing associations; and
- Groups of home owners.

The size of the grants is based on a financial gap analysis of the technical measures, including an inventory of the costs and savings in typical residential buildings in Bulgaria. The relative size of the grants increases with the number of measures implemented, the costs and the energy savings. The level of the grant is capped for each borrower (e.g. 20 % of the total amount disbursed by a Participating Bank for dwelling-level projects and 30% for building-level projects) and per technology type (for dwelling-level projects).

The programme has developed a list of eligibility criteria per technology type with minimum performance or design requirements (e.g. U-values for windows and insulation); and energy savings have to be beyond 20% of current national requirements. Technical eligibility requirements are periodically up-dated to reflect market progress and changes to national regulatory requirements linked to the transposition of the EU EPBD. Under the eligibility criteria set by the REECL programme, the technical measure selection (and related cost effectiveness) is dependent on the expertise of the **certified experts** for each technology type.

The application procedure for REECL projects is well monitored. Initial application forms (both financial and technical) are drawn up by loan officers from the banks in a one-stop-shop approach. These applications are all checked by the project consultant that was procured and managed by the EBRD.

Once the applications are approved (i.e. the project utilises eligible equipment and the costs are within the acceptable market range) and the banks have assessed the creditworthiness of the applicant, the household (or housing association) receives the loan and can contract an installer to implement the technical measures.

Installers need to draw up documents to prove that measures have been installed for the costs indicated in the application forms. Upon completion 100% of these documents are checked by the consultant, and additionally, 16-17% of projects receive a site visit by the consultant to verify that the measures have been properly installed.

In case of fraud, installers receive a warning. After two warnings, installers are removed from the list of eligible (authorized and accredited) **installers enlisted** under the REECL programme. Installers removed can apply to get back on the list once they have addressed the issues related to the quality of installation and/or any issues related to invoices or costs. This system has proven to be very successful in ensuring quality of works and the implementation of the correct technical measures.

A key success factor of the programme has been the cooperation between banks, media, manufacturers and equipment installers, led by the project consultant mandated by EBRD. The cooperation with banks reduced the barriers for households to apply for a loan, as these banks had local offices all over the country. Furthermore, the banks actively promoted the REECL

[20] http://www.reecl.org/indexen.php

programme based on their individual marketing budgets, thereby increasing the visibility of REECL. Publicity was further enhanced by organizing media events in which manufacturers could promote their technologies and the engagement of municipalities and utilities.

Despite limited REECL budgets for promotion activities, the programme has become very well-known in Bulgaria. All branches of participating banks in Bulgaria have provided information about REECL. The project consultant has also developed a package of technical assistance for both residential borrowers and participating banks. Technical assistance to participating banks includes training of loan officers, advice and guidance on marketing and promotion, implementation support with technical validation of loan applications and verification of completed projects requesting incentive payments. Technical assistance to borrowers encompasses awareness raising, advice and guidance on applicable solutions and techniques, online helplines for residential stakeholders, maintenance and update of lists of eligible materials and products and lists of **eligible accredited installers**.

3.1.7 Klimaaktiv Programme Austria

In Austria, the distribution of local subsidies is partly linked to the **klimaaktiv building standard**. The klimaaktiv building standard considers energy efficiency, the use of ecological building material, indoor air quality, the infrastructure nearby and the use of green area on/in the building. It doesn't consider professionals' knowledge, skills and competences directly. Nevertheless, if a professional holds a professional diploma and has taken part in a course on klimaaktiv building criteria or has designed or constructed a building according to the klimaaktiv building standard, the professional is considered as a klimaaktiv competence partner with the needed knowledge, skills and competences.

Name of measure	klimaaktiv Programme
Policy type	Grants/Subsidies
Targeted sector(s)	Residential, Commercial, Public
Targeted actor(s)	Central Government, Energy Agencies, Energy Suppliers, Prof. Associations
Implementation period	Since 2004
Implementation body	Austrian Ministry for Sustainability and Tourism (BMNT), Austrian Federal Government; Austrian Energy Agency
Website	http://www.klimaaktiv.at
Renovation depth	*Medium*
Supported interventions	Modernisation interventions in large residential buildings, energy use optimisation measures for companies, energy performance contracting in federal buildings, energy-efficient appliances
Budget	Approximately EUR 7 million per year.
Brief description	klimaaktiv is the Austrian climate protection initiative to support energy efficiency improvements and increased use of renewables in all sectors of the economy through direct grant support, information, education, training of professionals and advice. Under the four thematic headings of Building and Renovation, Saving Energy, Renewable Energy and Mobility, klimaaktiv outlines new solutions, sets quality standards and increases the knowledge and competence of the players involved. The primary objective of klimaaktiv is to introduce and promote climate friendly technologies and services.
Impact so far	n/a

3.1.8 Warmer Homes Scotland Scheme

Name of measure	Warmer Homes Scotland Scheme
Policy type	Grants/subsidies
Targeted sector(s)	Residential – Owner Occupier and Private Rented Sector
Targeted actor(s)	Eligible Owner Occupiers and Tenants of Private Sector Rental Landlords
Implementation period	Since September 2015 – August 2022
Implementation body	Scottish Government
Website	http://www.greenerscotland.org/home-energy/advice-and-grants/warmer-homes-scotland
Renovation depth	Low
Supported interventions	Fabric measures, such as insulation, to improve the energy efficiency of the Scottish housing stock. central heating systems including gas boilers and newer technologies like air source heat pumps, biomass and solar PV water heaters.
Budget	The Scottish Government has made £23.75 million pounds available for 2019/20.
Brief description	The Warmer Homes Scotland Scheme is the Scottish Government's national fuel poverty scheme designed to tackle fuel poverty by providing home energy efficiency measures, including renewable and micro generation measures to eligible households who are living in, or at risk of fuel poverty. Eligibility for the scheme is based on both the occupant and the property meeting the eligibility criteria of the scheme. The contract was extended in January 2019 to allow the scheme to continue to be delivered for a further 2 year period from 1 September 2020 -31 August 2022. This extension includes a contractual commitment on the Scottish Government to provide a minimum of £32 million plus VAT (£38 million in total) in funding over the 2 year extension period.
Impact so far	Since September 2015, the scheme has assisted over 16,000 fuel poor households across Scotland become warmer and have more affordable energy bills, saving on average of over £300 per year on their energy bills. Warmworks Scotland LLP, the managing agent for Warmer Homes Scotland has procured a supply chain of 21 installers to deliver the scheme, the majority of which are SMEs. Since its launch, the scheme has helped to create almost 500 jobs and more than 100 apprenticeships.

3.2 FISCAL INCENTIVES

3.2.1 Superbonus Italy[21]

In May 2020 the Italian Government issued urgent legislation to assist with the recovery of the Italian economy, following the unprecedented shock of the covid-19 pandemic. Among many other measures, legislation called "Relaunch Decree" (Decreto rilancio) introduced new tax credits for improvements to Italian properties. These tax credits, called "Superbonus" are intended to cover 110% of the costs of energy efficiency and structural seismic improvements of Italian properties, help with the recovery of the economy and in the process, ensuring tax compliance in the local building industry.

"Superbonus" is an unprecedented tax break as it covers 110% of qualifying expenditures incurred between 1st July 2020 and 31st December 2021.

This tax credit can be set against tax liabilities of the relevant property owner, over five years, in five equal annual instalments. It is of interest also to foreign owners of Italian properties, firstly because it is available for Italian properties` qualifying expenses generally (whatever the country of residence of the owner) and secondly, because it is "transferable" to third parties.

[21] https://www.italy-uk-law.com/italian-news/superbonus-the-new-tax-credit-for-italian-property-improvements/

"Superbonus" can be traded (Cessione del credito) by entitled property owners , effectively by selling it to third parties, or setting it against their own suppliers` invoices (Sconto in fattura) thus effectively getting the costs of the property improvements paid by the Italian Revenue. It is a substantial improvement on similar, earlier legislation.

The reason why this tax break is up to 110% of qualifying expenses is that a further 10% is added to the total qualifying expenses (100%) actually incurred, to cover the rate of discount likely to be applied if this tax credit (Superbonus) – which is split in 5 equal yearly instalments – is negotiated, sold at a discount, to a bank or other financial institution. Effectively, 2% discount for each of the 5 years of this tax credit.

Qualifying expenses.

"Superbonus" is granted for strictly defined qualifying building works / expenses. This legislation refers, separately, to "Leading works" (Interventi trainanti) and "linked secondary works" (Interventi trainati).

Except for seismic structural improvements, you need to carry out at least one qualifying "Leading work" resulting in an improvement of 2 energy performance classes of the rating of the building in question in order to qualify. Then, any linked secondary works may follow and will be included in the overall tax credit calculation.

In very general terms, leading qualifying works are:

- Thermal insulation (cladding) of more than 25% of the external surface area of a residential building
- Replacement of heating / air conditioning equipment of residential buildings and boilers (condensation boilers, heating pumps etc.) plus disposal of the old equipment
- Seismic structural improvements (Sismabonus) that will increase safety / resistance of buildings to earthquakes.

Secondary linked works include a host of other improvements, ranging from the installation of solar panels, to double glazing, installation of electric car chargers etc.

Where thermal insulation (No. 1 above) is carried out in a block of flats, the tax credit is up to Euro 40,000 for each of the first 8 flats and Euro 30,000 for any subsequent flat.

Where the replacement of air / water heating equipment is carried out in a block of flats, the tax credit is up to Euro 20,000 for each of the first 8 flats and Euro 15,000 for any subsequent flat.

In general, qualifying expenses will attract the 110% "Superbonus" tax credit if:

- they are incurred between 01.07.2020 and 31.12.2021
- relate to residential buildings of private individuals / block of flats and not to commercial premises or premises of companies, commercial entities and professionals used for their trade / profession. Each private individual entitlement is limited to two separate and autonomous residential units.
- the properties affected must not registered at the local land registry under classes: A/1 (high quality homes), A/8 (Luxury villas) or A/9 (Castles and palaces).

Where building improvements do not qualify under the "Superbonus" legislation, they may still qualify for a more limited and restricted tax credit under the earlier "Ecobonus" legislation (50% – 65% – 70% – 75% – 80% and 85%), which continues to be applicable.

Italian VAT (Imposta sul Valore Aggiunto – IVA) is usually levied at 22%, however lower rates of IVA (usually 10%) will apply to "Superbonus" works / supplies.

How "Superbonus" works.

Once qualifying works have been carried out, fully or in part (it is possible to claim tax credit for works carried out in stages – "Stati di avanzamento"), following the correct procedure legal entitlement to the tax credit arises for the benefit of the Italian property owner, who will have the following options:

1) "Detrazione" – It will be possible to set the "Superbonus" tax credit against current Italian tax liabilities (Italian income tax – IRPEF), in equal instalments over a period of 5 years, or

2)"Sconto in fattura" – It will be possible to transfer the tax credit to the firm / company / trader that carried out the qualifying works / supplied the equipment and materials, up to the amount of their invoice, in full or partial settlement of the same, or

3) "Cessione del credito" – it will be possible to transfer this "Superbonus" tax credit to banks and financial institutions, against a cash payment and possibly subject to a discount. This "Superbonus" tax credit can then be transferred, further on to other, beneficiaries.

Where "Superbonus" tax credit relates to qualifying expenditures, improvements of the common parts of blocks of flats (Condominio), then each co-owner will be entitled a share of the tax credit. Each co-owner can then make a different choice as to the use of the share of "Superbonus" tax credit attributable to him / his individual flat(s). This tax credit is therefore fragmented, in line with the share of ownership of the common parts attributed to each flat / co-owner.

The original beneficiary of "Superbonus" is required to report his / her choice as to the use of his tax credit, to the Italian Revenue by the 16th March of the following year.

"Superbonus" Procedure

"Superbonus" tax credits are conditional on the relevant property / building complying with applicable local planning and building regulations. This is a major obstacle, because of the frequency of planning/ building "irregularities" in Italy. In addition, all the works must be carried out in compliance with all current health and safety regulations that may be applicable.

Professionals appointed to supervise and implement the qualifying works (architects, engineers and surveyors), are required to have professional indemnity insurance with an EU insurance company for an amount proportionate to the value of the qualifying works implemented and supervised, and carry a heavy burden of professional responsibility. The minimum amount of professional indemnity insurance is Euro 500,000. A lawyer (Avvocato) is also required to check all contracts, and make sure they are fully compliant and enforceable in law. These professionals are required to issue formal certification (Asseverazione) that all the technical standards applicable to the qualifying works / equipment have been complied with and all the expenses incurred, are both proportionate and suitable, for each stage of the works and on completion of the same.

3.2.2 Existing Buildings Programmes France[4]

Name of measure	Existing Buildings Programmes'
Policy type	Grants/Subsidies; Tax relief
Targeted sector(s)	Residential, Commercial, Public
Targeted actor(s)	Owner-occupiers
Implementation period	Since 1975
Implementation body	ADEME, the municipalities, ANAH (French Agency for Improvement of Existing Dwellings)
Website	n/a
Renovation depth	n/a
Supported interventions	Heat insulation improvements, heating regulation, the replacement of boilers or in some instances the installation of a wood stove; help low-income homeowners improve their main residence; improve privately owned rented housing units; improve the rental housing units they own or manage for social welfare purposes.
Budget	Large-scale funding system gathering private and public money to finance retrofitting operations will be implemented. The amount of this public financing for energy savings can be assessed at EUR 2 220 million (Fr 2.5 billion) in 1992. In the 2002 budget, building energy retrofits benefit from a tax reduction of 15% of expenses to a maximum of EUR 8 000 per family.
Brief description	The incentives are as follows: - *Tax reductions*: income tax reductions were available from 1 January 1990 until 31 December 1995 for heat insulation improvements, heating regulation, the replacement of boilers or in some instances the installation of a wood stove in main residences built before 1 January 1982. This measure was renewed in 1996. The tax reduction is valid for any type of work (not only energy management improvements) if it is carried out by professionals. - *Grants for housing improvements*: this government subsidy is to help low-income homeowners improve their main residence if it is over 20 years old. - *Grants from ANAH, the National Housing Improvement Agency*: this grant aims at helping improve privately owned rented housing units built more than 15 years ago. - *Grants for rental and social housing improvements (PALULOS)*: this grant assists organisations to improve the rental housing units they own or manage for social welfare purposes, rented to house low-income people, and which are more than 15 years old.
Impact so far	n/a

3.3 COMMERCIAL LOANS

3.3.1 Deutsche Bank Owners association (communities) loans Spain

The financing of renovation works in communities of owners was one of the most recurrent and complicated problems to solve in Spain.

Consumption and ordinary maintenance expenses for common services are included within the ordinary budget and are financed through community fees. But when it becomes necessary to renovate the façade, install an elevator or improve the energy efficiency of the building, ordinary fees are not enough.

In these circumstances, the usual is the financing of community works through apportionment at the expense of the owners, in accordance with their participation coefficients, as established in article 9.1.e) of the Horizontal Property Law. This represents an important additional effort for the community members, sustained over a more or less long period, which is not always available to everyone.

The innovative way would be the bank financing renovation works being the owners association the recipient. As the communities of owners are entities without legal personality, the procedure was complicated, forcing a unanimous agreement, and the signature of all the

owners, each of them responding jointly and severally. This joint responsibility was an almost insurmountable obstacle for most of the communities.

The panorama changed radically with Royal Legislative Decree 7/2015, of October 30, approving the revised text of the Land and Urban Rehabilitation Law , states in article 5 a) that the communities of owners may "act in the real estate market with full legal capacity for all operations, including credit, related to compliance with the duty of conservation, as well as participation in the execution of rehabilitation actions and in those of urban regeneration and renovation that correspond".

In this context, Deutsche Bank has been financing renovation and accessibility projects for communities of owners for more than 25 years. Avanza Credit is its specialized business area, focused on financing energy efficiency, accessibility and building renovation projects for communities of owners that require high investment. **Currently, they work with about 1,000 supplier companies that offer rehabilitation, energy efficiency or elevator installation services, among others.**

There are two types of loans that correspond to the specific needs of the communities of owners:

- Footprint 0 loan: financing focused on saving and energy efficiency (renovation of facades, roofs, installation of solar panels, enclosures ...)

- Renovate Loan: financing of the installation or renovation of elevators, access ramps and other elements that facilitate accessibility to the building.

The granting of loans at Avanza Credit is characterized by its agility in responding to the viability of projects within a maximum period of 24 hours. In addition, clients have flexibility in payment with repayment terms of up to 10 years and the possibility of having up to 100% of the project budget.

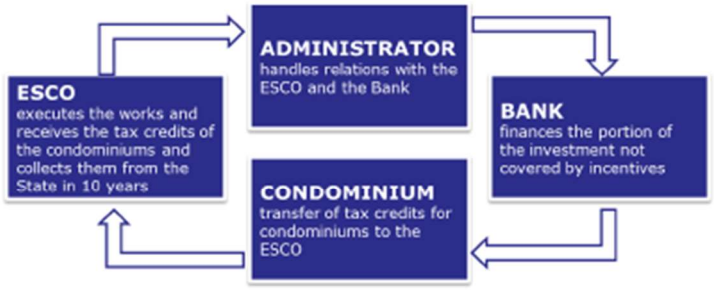
One of the innovative changes introduced by this type of loans is that the money is not going to the owner's community bank account, it is paid directly to the company implementing the improvements through the construction certification system.

Other banks, such as BBVA and Sabadell, as well as financial consultancies, are offering similar products.

3.3.2 Condominium Financing (Finanziamento Condominio) Italy[4]

Name	Condominium Financing (Finanziamento Condominio)
Timing	Since 2019
Overview	The Intesa Sanpaolo bank renews and enhances the catalogue offer dedicated to the Condominiums segment with particular attention to the new Condominium Financing. This scheme is a medium-long term loan

	intended to finance renovation works or other interventions on the building of single condominiums or condominium complexes (e.g. replacement or installation of boilers, photovoltaic systems, electrical systems, etc.). The funding cannot exceed 80% of the costs incurred.
Implementation details	The loan contract is a single contract, characterized by the possibility of choosing between monthly, quarterly or six-monthly instalments, the repayment of the loan takes place with the payment of deferred instalments which expire at the beginning of each month/quarter/semester. The amount that can be financed is between EUR 0.01 million and EUR 1million1 million (up to 80% of the total investment), the duration of the finance ranges from 24 to 124 months. The loan provides that the customer can choose between *fixed* and *variable rates*. Until 2021 the *fiscal incentives* in favour of Condominiums were confirmed: - tax reliefs up to 85% are foreseen for both energy-related redevelopment and adaptation to seismic regulations; - deductions modulated according to the level of energy efficiency achieved. The main market stakeholders (especially the ESCO) stimulate the demand for Condominium Financing, some *collaboration opportunities* are: - the main stakeholders in the market such as the condominium administrator associations and utility companies (through the establishment of ESCO) want to seize the opportunities provided by the institutions and contribute to the redevelopment of the Italian real estate assets; - opportunities for collaboration between organizations/private stakeholders and ISPs. *Credit granting rules*: - professional administrator registered in the Economic Administrative Directory or at least in a trade association; - condominium preferably already a customer for more than 24 months positively experienced; - maximum non-payment of the condominium amounting to a maximum of 5% of the total annual service charges; - % maximum incidence of the extraordinary instalment on the ordinary one equal to 50-60%. *ESCO projects*: - A2A Group has acquired the first independent Italian ESCO - Consul System - by a Utility to create operating synergies and develop new products and services for the customer base of both companies. Consul System is the main independent ESCO in terms of the number of EECs (Energy Efficiency Certificates) generated (2016). - Snam has acquired of an 82% controlling stake in TEP Energy Solution (TEP), one of Italy's leading enterprises in the energy efficiency sector. This is the first time that Snam has invested in the energy efficiency sector acquiring the ESCO (2018). Enel X is an ESCO that has been founded two years ago, and it is an Enel associate. In particular, Enel, acting through its subsidiary Enel X Italia, acquires Yousave, an Italian company active in the energy efficiency field, specialised in providing services to industrial and service companies as well as government, with a special focus on energy digitisation (2017). The main EE interventions carried out by Enel X in the residential sector concern the boiler and the building's envelope. Most of the costs are due to manpower (scaffolding, etc.) and to the envelope, whereas the cost of the boiler is more on less the 5 % of the total. On average, the cost of EE for condominium with 5 floors varies between EUR 0.5 million and EUR 1 million (the boiler costs around EUR 0.02-0.03 million). The contracting

	times are very long, and the time to start the project is around 9 months. *Description of financial mechanism*: - ESCO coordinates a complex and complete network of professionals dedicated to energy efficiency with the aim of providing the Condominium with concrete solutions, including all the necessary services, with a 'turnkey' approach. - The strength of the process is ESCO's role in fiscal management: the condominiums giving the tax credit to the ESCO (up to 85% of the investment), will only have to pay the part not covered by the incentives. - The bank, in this way, will have to finance the Condominium only for a marginal share of the total investment. For example, in an energy renovation project of EUR 100 000, the ESCO finances the 80% of the cost and the condominium the 20%. The ESCO recovers the 80% (EUR 80 000) in 10 years due to the tax relief (*Ecobonus*). The condominium finances the 20% (EUR 20 000) or requests a mortgage to the bank. This means that the condominium spends the 20% of the cost and the ESCO recovers 80% without interests. This is possible thanks to the *Ecobonus* tax deduction.  Figure 3. Flowchart of "Condominium Financing" mechanism *Limits:* The main risk associated with financing depends on the type of interest rate chosen by the customer: - with a *variable rate* there is the possibility of an increase in the interest rate with respect to the initial rate; - with the *fixed rate* is impossible to benefit from any reductions in market rates over time. The condominiums composed exclusively of legal persons (e.g., associated firms, companies) are excluded from the possibility of applying for financing.
Impact	Using the *Ecobonus* scheme, in general the 85 % tax relief is for condominiums, while for the single apartments the tax relief is of 55-60%. In 2019 Enel X and Intesa Sanpaolo have signed an agreement for the financing of energy requalification and seismic safety measures for condominium buildings.
Link	- https://www.intesasanpaolo.com/it/business/prodotti/finanziamenti-per-imprese-investimenti-aziendali/finanziamento-condominio.html - https://corporate.enel.it/it/media/press/d/2019/06/enel-x-e-intesa-sanpaolo-siglano-un-accordo-sulla-riqualificazione-energetica-dei-condomini service-company-yousave - https://www.a2a.eu/en/a2a-acquires-consul-system-first-independent-italian-esco-leader-energy-efficiency - http://www.snam.it/en/Media/Press-releases/2018/Snam_to_invest_energy_efficiency_sector.html
Success factors	- Possibility to access the Ecobonus incentives. - The duration of the financing can be chosen (from 24 to 124 months) on a monthly, quarterly or half-yearly instalment. - The Consumer has the right to withdraw from the contract, without penalty and without having to indicate the reason.

3.4 MORTGAGES

3.4.1 Green Financing Scheme in the Netherlands

The "Green Financing Scheme" includes a large number of categories of projects that in one way or another contribute to a "greener" world, such as nature development, organic agriculture and making the built environment more sustainable (new builds and renovations).

As an example, there is a category closely related to BUSLeague, called "Renovation of homes". The renovation of an owner-occupied home is eligible for a green certificate if energy-saving measures are applied that lead to an improvement of the energy performance index by (between brackets the amounts that can be borrowed on favourable terms):

- at least 0.6 to a maximum of 1.4 (€ 25,000 (for monuments € 45,000))
- at least 1.3 to a maximum of 1.4 (€ 50,000 (for monuments € 70,000)
- at least 1.5 to a maximum of 1.2 (€ 75,000 (for monuments € 100,000))
- up to energy index 0 (€ 100,000 (for monuments € 150,000))

A similar system is used for the categories "renovation of utility buildings" and "renovation of industry buildings".

The improvement of the energy performance index must be calculated by a **"certified energy consultant"**. This calculation is based on a building survey.

The Dutch regulation is the national elaboration of the Energy Performance of Buildings Directive (EPBD) from the EU. Therefore, fundamentally, the principles of the Green financing scheme are usable throughout Europe. To execute the EPBD every country has to have a **system of certified energy consultants** who can properly calculate the energy performance index. The Dutch elaboration of the EBPD for calculating the energy performance index is presented in the NTA8800 (Nederlandse Technische Afspraak / Dutch Technical Agreement).[22] NTA 8800 is assigned in the Dutch law.

Requirements for a "certified energy consultant":

A consultant must pass a series of exams to become a certified energy consultant. There are two different series of exams:

- for dwellings,
- for utility buildings (all non-dwellings who need an energy label by law) and dwellings combined.

Two levels of consultants are distinguished: "base" consultants or "detail" consultants. The latter have a broader knowledge and are the ones appointed to calculate the energy performance index for the "Green Financing Scheme".

3.4.2 FHA's Energy Efficient Mortgage program (EEM) USA[23]

In 1992, the Department of Housing and Urban Development initiated the Energy Efficient Mortgage as pilot demonstration in five states. In 1995, the pilot was expanded as a national program.

EEMs recognize that reduced utility expenses can permit a homeowner to pay a higher mortgage to cover the cost of the energy improvements on top of the approved mortgage.

Under its EEM program, FHA Insures a borrower's mortgage used to purchase or refinance a principal residence, and the cost of energy efficient improvements to be made to the home. The borrower need only qualify for the loan amount used to purchase or refinance a home. The borrower is not required to be qualified on the total loan amount with the portion of loan used to finance energy efficient improvements. Like all FHA insured mortgages, the loan is

[22] https://www.nen.nl/nta-8800-2020-a1-2020-nl-278296
[23] https://www.hud.gov/program_offices/housing/sfh/eem

processed, approved, and funded by a lending institution, such as a mortgage company, bank, or savings and loan association. After the mortgage closes, FHA insures the loan to protect the lender against loss in the event of payment default.

Energy Package

The energy package is the set of improvements that the Borrower chooses to make based on the recommendations and analysis performed by a qualified home **energy assessor**. The improvements can include energy-saving equipment, and active and passive solar and wind technologies. The energy package can include materials, labour, inspections, and the home energy assessment by a qualified energy assessor.

Energy Efficient Improvements Must Be Cost-Effective

The financed portion of an Energy Package must be cost-effective. Improvements are cost-effective when the cost of making them is equal to or less than the money saved on energy from those improvements.

Cost Effective Test for Existing Homes

Improvements to existing homes are cost-effective when they pay for themselves over their expected life span with energy dollars saved. Worded differently, the money saved in energy bills because of an improvement, must add up to the same are greater amount than the cost of making the improvement.

A qualified home energy assessment will determine whether the improvements are cost effective.

The assessment evaluates the home's energy efficiency, and conducts analysis to assess the potential savings for a variety of improvements.

Cost Effective Test for Newly Constructed Homes

For newly constructed homes, the improvements are cost effective when they exceed the standards set by the most recent International Energy Conservation Code (IECC) that has been adopted by HUD for new construction properties. A qualified home energy assessment will determine which improvements exceed the IECC standards.

Home Energy Assessment

The Borrower must obtain a home energy assessment. The purpose of the energy assessment is to identify opportunities for improving the energy efficiency of the home and their cost-effectiveness.

The assessment must be conducted by a qualified energy rater, assessor, or auditor using whole-home assessment standards, protocols and procedures. Qualified home energy raters/assessors must be trained and certified as one of the following:

- Building Performance Institute Building Analyst Professional
- Building Performance Institute Home Energy Professional Energy Auditor
- Residential Energy Services Network Home Energy Rater
- How Much of an Energy Package can Be Financed?

3.4.3 Green mortgage co-developed by Romania GBC with leading regional banks

Romania Green Building Council has co-developed with leading regional banks an innovative *Green Mortgage* product that rewards energy efficiency and environmental responsibility. The preferential financing allows the project developer to invest early in essential green design and other solutions and rewards the homeowner with a better-quality home and a lower monthly total cost of ownership.

The ***Green Mortgage*** provides discounted mortgage pricing available to suitably qualified, prospective home buyers interested in buying a home or apartment subject to guidelines established by the Romania Green Building Council (RoGBC) related to superior energy

efficiency and environmental considerations. The Green Mortgage applies only for buildings certified by RoGBC within the Green Homes program. The GREEN HOMES toolkit is available in English for full details about the programme.

For clients in Romania interested in purchasing a green home, Raiffeisen Bank's Casa Ta Verde, Alpha Bank's Creditul Alpha Green and BCR's Casa Mea Natura are the first mortgage products dedicated to Green Homes certified by RoGBC projects available in Romania.

Based on the success of the initiative in Romania, the SMARTER Finance for Families Horizon 2020 project was initiated with the goal to implement ambitious yet practical Green Homes & Green Mortgage programs in 12 European countries that includes the collaboration and participation of 17 expert green building, green energy, research and other organizations. Organizations from Belgium, Bosnia-Herzegovina, Bulgaria, Czech Republic, Denmark, Georgia, Greece, Ireland, Italy, Poland, Romania, Slovakia, Turkey and Ukraine are participating in this comprehensive project and staring similar programmes under the brand name in their respective countries.

3.5 SOFT / PREFERENTIAL LOANS

3.5.1 HBFI Green loan in Ireland

Home Building Finance Ireland have launched a new green loan product offering a discount of up to 0.5% on loans to homebuilders for developments certified with Irish Green Building Council's Home Performance Index certification. The HBFI Green Funding Product is the first Irish green financial product fully aligned to the Paris Agreement and EU taxonomy regulations. In order to qualify for the discounted product, all residential projects must be certified to the Home Performance Index standard.

The Home Performance Index (HPI) is Ireland's national certification for quality and sustainability in new housing developments. The certification goes well beyond the Energy Performance Certificate (EPC) to address all of the environmental impacts of new homes such as the production of building materials, impact on ecology, pollution, water consumption and flood risk. It also encourages home builders to improve the health of new homes by improving daylighting and acoustics and minimising harmful chemicals such as radon and VOCs. To ensure quality, assessing the skills of the design QA5.0 and construction team 4.0 is mandatory as part of the certification process. HBFI operates as a private company wholly owned by the Minister for Finance. It provides funding at market rates for commercially viable residential developments in the Republic of Ireland.

3.5.2 "L'éco-prêt à taux zéro" in France

The property must be a primary residence and must be built prior to January 1, 1990. Property owners are also eligible if property is occupied as a principal residence by the tenant. If the property has not been used as a main residency, this condition must be fulfilled within six months of works' completion.

The duration of the loan is normally 10 years but can be up to 15 years when at least three elements of work are undertaken. **Eligible works** include loft insulation, wall insulation, energy efficient space and water heating, double-glazing, as well as renewal of a septic tank system. These works must comply with specified minimum standards of performance.

In order to obtain the loan, one of three conditions must be fulfilled, depending on the type and age of property.

- Undertake at least two elements of work eg, double glazing and roof insulation; or
- Achieve a minimum energy performance standard; or
- Undertake the installation of a septic tank system.

The amount of the loan is up to €20,000 for two elements of works and up to €30,000 for three or more. It is up to €10,000 for a septic tank alone, but this sum must be included within the overall cap of €30,000.

It is possible to be granted a tax credit for the works, as well as take advantage of the tax-free loan.

3.5.3 JESSICA Holding Fund in Lithuania

The JESSICA Holding Fund in Lithuania was set up with an initial structural fund contribution of €127mln and €100mln from national funding. The fund is managed by the European Investment Bank on behalf of the Ministry of Finance.

The Fund offers a combination of subsidized loans and grants for the full renovation of multi-apartment buildings and student dormitories. The loan length can be up to 20 years with a two-year grace period and the interest rate is fixed at 3%. Grants and subsidies were initially precluded from the scheme. However, it became apparent that combining loans with non-refundable grants was a much more powerful incentive for homeowners.

From the initial planning to the current implementation, the MA benefited from the support of the EIB including for the preparation of the initial feasibility studies and technical reports. An initial feasibility study was carried by the EIB, which provided detailed suggestions for the selection of final recipients and measures to be taken. After four years of operations, JESSICA in Lithuania is considered one of the most advanced holding funds in Europe.

The peculiarity of the national situation should not be overlooked. In Lithuania, there is a large number of old multi-apartment buildings and improving living conditions for their residents is an important goal. The government and the two involved ministries have kept a close eye on the process. A series of legal acts, often hotly debated, were approved to facilitate its implementation. Overall, the FIs, the technical measures, the beneficiary's role etc. are regulated by national law.

Awareness raising and knowledge sharing are considered key factors for the successful implementation of the Fund. Stakeholders (e.g. homeowners or housing managers) do not have the required knowledge to assess the validity of a project proposal. The training of "housing or project managers" is especially important, as they often face difficulties in dealing with homeowners. For these reasons, workshops and training sessions are held regularly.

The JESSICA Holding Fund in Lithuania was set up with support from the ERDF and EIB. At the programme inception, final recipients were free to select any type of measures included in the national legal act on energy efficiency. The legislation is very broad and includes a wide variety of measures. The EIB, which is currently managing the Fund on behalf of the MA, realised that it was too burdensome to evaluate appropriately proposals with such a multitude of technology options and suppliers. Recently, it has been ruled that final recipients are allowed to choose from a **pre - selected list of service providers** offering services delivered through approved working methods. The list of eligible measures remains quite broad. There has been considerable interest in the programme (amounting to 2,000 buildings) and 130 projects are currently being financed.

3.5.4 KfW Programme, Germany

The programme "Energy Efficient Construction and Refurbishment" provides financing by way of soft loans and grants for energy efficient construction and refurbishment activities for the German residential sector.

The programme is available for all private investors in the residential building sector as well as housing companies at equal conditions.

During the 2006-2012 period, about €48 billion were provided as loans and €108 billion were invested. During the same period, the programme led to reductions of 5.9 m t CO2-equivalents.

To be eligible for the programme, it is a precondition that the efficiency standards achieved by the project are better than the requirements as set out in the German Energy Savings Ordinance.

Eligibility is based on two key parameters: (1) the annual primary energy demand compared to the demand of a new building (the so-called "reference building") and (2) the structural heat insulation (specific transmission heat loss) compared to the reference building.

The basis for measuring the level of energy efficiency is the so-called "KfW-Efficiency House Standard.

There are three levels of promotional incentives for energy efficient construction activities expressed as Efficiency House Standards 40, 55 and 70. This means that the primary energy consumption of the housing unit in question corresponds to 40%, 55% or 70%, respectively, of what the reference building is allowed to consume according the Energy Efficiency Ordinance.

For all levels, the promotional interest rate is the same. The difference pertains to the level of partial debt relief (in percent), in the form of a repayment bonus, which is granted to the borrower (in addition to the favourable interest rate) once the targeted efficiency level has been reached and verified by an energy expert. For instance, the Efficiency House 40 benefits from a 10% debt relief. The maximum loan amount is €50,000.

For energy efficiency refurbishment activities, there are in total six promotional levels: starting with Efficiency House 55 as the most ambitious level, followed by Efficiency House 70, 85, 100 and 115 as well as a separate level for monument buildings.

The incentive in terms of partial debt relief starts at 2.5% for the Efficiency House 115 and reaches 17.5% for the most ambitious level Efficiency House 55.

Customers who do not target a deep retrofit of their building or housing unit can benefit from promotional loans for single measures such as windows, heating systems or insulation.

Customers who do not want to apply for a loan also have the option to apply for a grant. The amount available is based on the same energy efficiency levels as for the loans and calculated based on the maximum loan amount applicable. It varies between 10% and 25% of the maximum loan amount of €75,000 (i.e. between €5,000 and €18,750).

The involvement of an energy consultant is mandatory in the application process. The consultant is responsible for checking whether the construction or refurbishment project is properly designed to achieve the targeted efficiency level. An internet-based tool has been developed to compare the technical details of the project with the targeted efficiency level.

3.5.5 Livret de Développement Durable, France

In October 2006, the French Government announced the creation of a 10 billion Euro fund for the funding of domestic energy conservation projects with low-interest loans. Under the LDD (Livret de Développement Durable)[24] banks finance the development of SMEs. Banks must use a portion of these funds to offer preferential loans for residential energy conservation projects. The LDD cap has been raised to 6000 Euro/person to raise additional funds for these loans. As of 2009 the account pays tax-free annual interest of 2.5%. In 2008, banks had to dedicate 2% of the funds to energy conservation loans, rising to 5% in 2009 and 10% thereafter. Preferential loans can be awarded to individuals, co-properties and entrepreneurs for the purchase and installation of: energy efficient boilers; thermal insulation (walls, windows, shutters); thermal regulation equipment; equipment producing energy from renewable sources; space and water heating equipment using wood or other biomass; heat pumps. **Applicants must provide the bank with documents from the equipment installer, certifying that the equipment and installation meets the required energy efficiency criteria**.[8]

3.5.6 City of Stuttgart, Germany

The city of Stuttgart has developed a 'care-free energy renovation package' for homeowners. The package is applicable for two types of retrofit work - the heating system and/or the building envelope – and it includes the following services:

– Concept and planning

– Building and construction

[24] European Commission, Cohesion policy and energy challenge: boosting results in EU regions. IP/08/267. 2008, European Commission: Brussels

– Operation and maintenance (for the heating system only)

– Financing (for the heating system only)

– Guarantee and assumption of risk.

The package offers a high level of security and flexibility to homeowners in the form of:

– Standard model contracts and tendering documents developed by the city of Stuttgart.

– **Independent technical and financial advice accompanied by continuous quality control provided by Stuttgart's Energy Advice Centre (EAC). The EAC guarantees that the contracted craftsmen and building firms comply with the "Stuttgart Retrofit Standard" which was developed to ensure high quality energy renovation. It helps to select certified contractors/energy suppliers.**

– High quality retrofit work is implemented by the municipal energy utility Stadtwerke Stuttgart (ESCO) and a private company 'Rahm+' which is also the general coordinator of the renovation work. The ESCO guarantees the technical building system during the contracting period.

– An energy supply contracting model is offered to homeowners who wish to replace their heating system but cannot or do not want to take out a loan (e.g. due to their age or creditworthiness) or spend their savings. Instead of a loan, they pay a fixed monthly service fee to the ESCO which is the owner of the heating system.

– Secure energy supply – highly efficient, resource-saving and climate-friendly.

– Modular contracts – homeowners can benefit from and finance all or part of the proposed services.

3.5.7 Bordeaux Metropole, France

Bordeaux Metropole has built partnerships with commercial banks in order to stimulate the uptake of the national 0% Eco-loan and to develop and promote low interest 'energy renovation loans'.

Bordeaux Metropole has taken a holistic approach to renovation. Awareness raising, technical support and financial incentives targeting homeowners are all provided via a Local Energy Renovation Platform. The Platform provides technical and financial support to homeowners and stimulates the market by connecting banks and contractors with homeowners.

The Platform stimulates the uptake of the 0% Eco-loan: independent energy advisors help homeowners develop technically feasible projects eligible for the Eco-loan that do not need to be checked by the banks.

The Platform also provides a **list of craftsmen certified** within the framework of a national quality certification scheme 'RGE' or a quality charter developed by the Metropole. This inventory is promoted on the Platform.

3.6 GUARANTEES

3.6.1 KredEX fund, Estonia[25]

Guarantee programme provided by development and public bank. In KredEx, a revolving loan fund has been established by combining different funding sources: ERDF, Council of Europe Development Bank CEB and KredEx's own funds. The financial mechanisms are a preferential loan and guarantee sheme and a grant scheme. The initial ERDF loan (€17.7 m) allowed the MA to set up the Fund. It is precisely the structural fund contribution, on which interest rates do not have to be computed, which allows KredEx to provide final recipients with preferential loans.

[25] http://www.kredex.ee/en/

Between 26th June 2009 and 30th June 2013, 534 loans for 515 buildings were financed by way of loans amounting to a total of €54.38mln supporting investments totalling €75.42mln. Expected energy savings for buildings in Estonia were 36.2%

The renovation loan provided by Kredex targets apartment buildings constructed before 1993. The loans can be applied for by apartment associations, building associations and communities of apartment owners in buildings with at least 3 apartments.

The minimum loan amount is €6,400 per apartment building. The loan maturity is up to 20 years and average interest rates in 2012 were between 3.5% and 4%. Interest rates are fixed for a period of 10 years, while with normal commercial loans they can be fixed for only 5. At least 15% of the total amount must be co-financed by the final recipients.

An additional grant component can be combined with the loan. The grant rate depends on the expected energy savings:

1. a saving of 20-30% leads to a grant of 15% of the costs;

2. a saving of 40% leads to a grant of 25%; and

3. a saving 50% leads to a grant of 35%.

It is compulsory to carry out an energy audit at the beginning of the application process and the loan must be used to finance the measures recommended in the audit. **Energy audit must be carried out by a licensed, accredited and independent energy auditing company**. The energy auditor takes measurements, collects data, provides a technical overview of the state of the building to identify the baseline energy consumption and proposes EE refurbishment measures that lead to reductions in energy consumption of at least 20%. The energy audit reports need to follow the general requirements for energy audits as specified by KredEx.

Monitoring the quality of the works was at times difficult. To overcome this, KredEx relied on the support of a local NGO to collect and evaluate feedback from previous projects.[8]

3.7 ON-BILL FINANCING

3.7.1 USA – Clean Energy Works Program (CWEP)

In 2009 this model was introduced via the Clean Energy Works Program (CWEP) in Portland (Oregon). Under CWEP single-family residential homeowners can receive 100% financing to implement a wide range of EE measures. Loans are provided at attractive levels of fixed interest rates and are amortized over a 20-year period. Customers repay loans through their regular utility bill. CEWP is a joint venture between the Energy Trust of Oregon, the City of Portland, and Shorebank Enterprise Cascadia (SBEC), which issues the loans. As part of its underwriting process, SBEC conducts a standard credit check and property title search. The local participating utility also provides SBEC with 12 months of a customer's repayment history. Loans issued under CEWP will be made as a deed of trust filing that has a junior position to a customer's existing mortgage. CEWP loans will be structured such that they are due upon the sale or transfer of a property. SBEC manages a revolving loan fund, on behalf of CEWP, through funds received from both the City of Portland and Federal Energy Conservation Block Grants. In addition to the joint venture partners, CEWP is being implemented as a public-private partnership that involves local utilities (Portland General Electric, Pacific Power, and Northwest Natural) and a group of **selected EE contractors that meet certification requirements to be considered qualified to perform this type of work[26].**

[26] Hinkle, B. and D. Kenny, Energy efficiency paying the way: new financing strategies remove firstcost hurdles. 2010, CalCEF Innovations: San Francisco

3.8 BONDS

3.8.1 Green municipal bonds in France

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. Capacity building and improved cooperation between municipal departments could help to track large-scale climate and environmental investment projects.

The Ile-de-France region have been issuing since 2012 green bonds with an expected volume of €800 million for the period of 2020-2030 & 2040, to finance the ecological transition in the region, including the green building through:

- Construction of buildings following a sustainable development approach and promoting respect for the environment: a) The **primary energy demand** (PED), which defines the energy performance of the building constructed, is at least 20% below the threshold set for near-zero energy buildings (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and of the Council. The energy performance is certified by means of an Energy Performance Certificate (EPC) for the construction. b) For buildings larger than 5,000 m2, on completion, the resulting building shall be **tested for airtightness and thermal integrity**, and any deviations from the performance levels set at the design stage or defects in the building envelope shall be disclosed to investors and clients. c) For buildings larger than 5000 m2, the **Global Warming Potential (GWP) of the life cycle** of the building that results from the construction has been calculated for each stage of the life cycle and shall be made available to investors and clients on request.
- Renovation of existing buildings that meets one of the following criteria: a) Heavy renovation according to the **NZEB (Near Zero-Energy Buildings) standard** for France, b) Renovation leading to a **reduction in primary energy consumption** (Cep) of at least 30%.

4 CONCLUSIONS

Energy efficiency is establishing itself as a differentiated vector of the building sector in order to receive financing independently to perform energy efficiency improvements as the only goal and also is being included as part of the financing conditions for renovation works financing. Furthermore, it is increasingly common to find financing mechanisms that promote sustainable and environmentally friendly buildings.

In this context, public and private entities involved in offering financing opportunities related to energy efficiency have been progressively introducing mechanisms that ensure investment efficiency directly related to the quality of the entire process. To achieve the profitability of the investments, it is necessary that the EE improvements financed ensure cost-effective measures implemented with the highest possible quality. For this, it is essential, on the one hand, that the professionals who decide on the measures and implement them have the appropriate training, and on the other hand, that the professionals who have the appropriate training have a recognition system that allows them to be easily identified.

Based on the analysis of the existing literature and the collaboration of the project partners, the different financial mechanisms in relation to energy efficiency have been classified and exemplified, highlighting which mechanisms have been used to achieve the aforementioned quality. The most successful experiences show that the following initiatives have a very positive impact on improving the quality of financed actions:

- Having **adequate training** for the different stakeholders of the value chain, but especially for those in charge of coordinating the work, selecting the improvements to be implemented, and executing the work on site. Offering such as free training and with formats adapted to the conditions of the workers facilitates this point. The One Stop Shop can be a suitable means to channel this training.
- Having a **certification system** or at least recognition of the skills and knowledge of the professionals mentioned above.
- Drawing up **lists of professionals and companies (recognised or certified)** available to perform the task financed. It is recommended that the people who are in this list have the training and the corresponding certification mentioned in the previous points. It is also highly recommended that the financing is conditional on the professionals and / or companies from said lists being selected.
- Installing a **quality control** system that allows checking the correct operation and durability of the selected measures as well as their correct installation. This quality control system should help improve both the training and certification and the cleaning of the list of professionals and companies.

It is a long way to activate a financial mechanism. For this reason, it is advisable to start from previous milestones reached at the regional and national level regarding "Registers of professionals" and "standards, indicators and labels". This will be done in BUSLeague in tasks related to Preparing for Personal and Mutual Recognition and to implement the digital applications for upskilling and recognition of skills.

According to this, the desk research carried out for the preparation of this report has revealed several initiatives that we list below:

Recognition of skilled professionals / companies

- Register of Conservation architects (info provided by IGBC)
- Accredited Retrofit Coordinator (info provided by IGBC)
- SEAI Registered Technical Advisor (info provided by IGBC)

- RGE label (info provided by AVE)
- Register of Certified Energy Consultants (info provided by ISSO)

Recognition of standards and schemes

- PAS 2035 (info provided by IGBC)
- IGBC HPI (info provided by IGBC)
- BES Offices (info provided by IVE)
- Registro "Calidad del Hábitat Construido" (info provided by IVE)
- "BBC label" & "E+C label": life-cycle concept based on whole-life carbon assessment (info provided by AVE)
- NZEB standard for France (info provided by AVE)

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