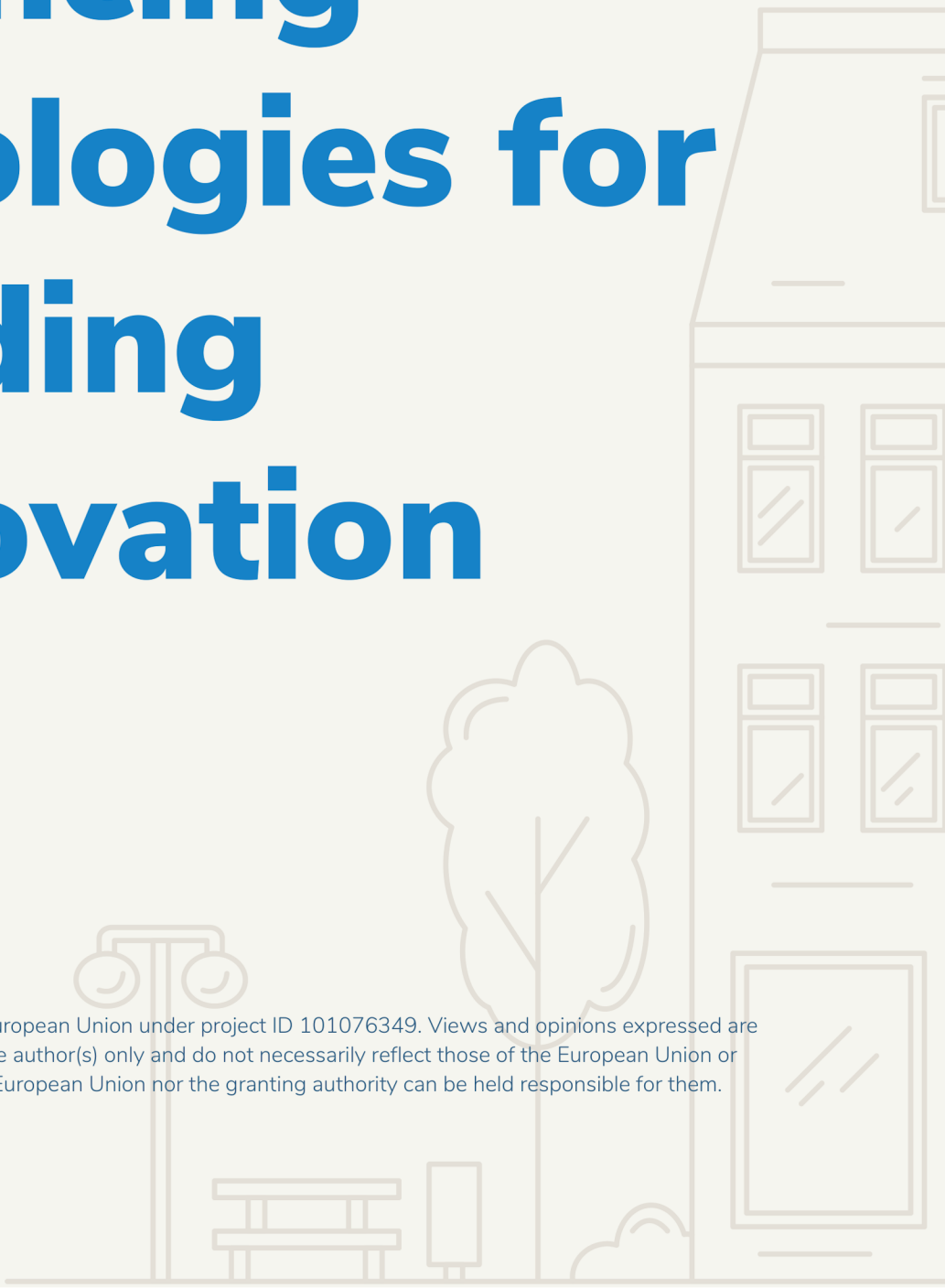
ENERGATE
ENERGY EFFICIENCY MARKETPLACE

BRIEF

# Financing Typologies for Building Renovation



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# INTRODUCTION

The ENERGATE project pursues to develop an effective, user-friendly, web-based energy efficiency marketplace that combines energy services and sustainable finance to accelerate the renovation rate of buildings by increasing the chances for projects to be financed.

In the context of the ENERGATE project, a review on financing typologies has been conducted, based on 83 relevant publications and 65 case studies of renovation projects in 18 European countries.

These projects were implemented in buildings of various uses and the selected retrofitting measures considered a variety of interventions.

The most relevant financing typologies which have been identified and will be explored in ENERGATE are presented in this document.

# Financing Typologies

## Grants & subsidies

### What they are

Grants are funds that do not require repayment, while subsidies may include low-interest loans, tax credits or deductions.

### Requirements

Such financing mechanisms may have specific eligibility criteria. They are usually granted to renovation projects that are likely to bring about public benefits, have a positive environmental impact, reduce carbon emissions and so on.

### Challenges

Due to the strict eligibility criteria, the application processes to access funding might be too complicated and could even delay renovation projects. Moreover, the budget is restricted and, if a project relies exclusively on grants, there is a considerable risk that it will not be completed, should additional unpredictable expenses occur. Another considerable challenge is the possibility of attracting free riders. Finally, non-repayable funding options could discourage private financing.

### How they work

Grants and subsidies are typically provided by governmental bodies (e. g. the European Union, local governments, municipalities etc.), but may also be offered by non-profit organisations or private institutions.

### Benefits

Because agencies which offer grants and subsidies do not expect financial profits, the projects to be funded are selected considering the benefits that might ensue, instead of taking into account return on investment and payback time. Thus, projects that might be neglected by private investors due to limited financial returns, despite being very promising in terms of environmental or even social impact, can be supported by grants and subsidies. Besides, these funding options can be used in combination with other financing mechanisms to overcome certain barriers, such as high upfront costs.

# Financing Typologies

## Tax-related schemes

### What they are

Tax incentives may include tax credits, tax deduction and accelerated depreciation. Another noticeable tax related scheme is the Property Accessed Clean Payment (PACE).

### Requirements

To be beneficial, tax related financial instruments require sufficiently high tax collection (thus they me be ineffective in countries where tax evasion is common).

### Challenges

Unfortunately, low-income households may not be significantly benefited by such schemes. Limited awareness of available tax incentives may also be a considerable barrier. Moreover, whether a specific tax related scheme can be applied in a certain country largely depends on the country's economy and tax collection system.

### How they work

Tax credits are provided by local governments as a way of incentivising investment in sustainable technologies by providing financial benefits. As far as PACE programs are concerned, a loan which covers initial costs of energy efficiency investments is provided, which is then repaid through a special estimate in the property tax account.

### Benefits

Similarly to grants and subsidies, tax incentives do not require return on investment and can therefore encourage the application of measures which might not be attractive for private investment. When it comes to PACE programs, a significant benefit is the fact that the provided loan does not require collateral and is linked to the property instead of the owner.

# Financing Typologies

## Debt financing

### What it is

Debt financing may include traditional loans, energy efficient mortgages (EEMs), as well as innovative mechanisms such as on-bill repayment schemes and crowdfunding.

### Requirements

Secured loans require collateral, while unsecured loans have stricter lending standards and higher interest rates.

### Challenges

Building owners may be reluctant to take on additional debt and perceive energy efficiency investments as too risky. Furthermore, vulnerable groups may not be eligible to debt financing. Besides, in certain European countries, benefits of renovation projects have not yet been perceived by financial institutions and, therefore, loans tailored to the needs of energy efficiency projects may not be available. On-bill finance also involves significant problems, such as complex designing, risk of partial or no payment by consumers, evaluation of credit risk, as well as regulatory issues.

### How it works

Loans can be provided by banks, credit unions or private lenders. They may have different structures. When it comes to EEMs, based on the anticipated energy savings, owners can qualify for a larger mortgage or a lower interest rate. Furthermore, governments and banks in the EU have begun to implement public-private partnerships to maintain low interest rates for loans associated with energy efficiency upgrades, so that renovation rates can be increased. As far as on-bill finance is concerned, building owners can repay loans through their utility bills. Lastly, especially when small-scale projects are considered, building owners can raise funds through crowdfunding platforms.

### Benefits

Debt financing is a more sustainable policy compared to other practices such as reliance on grants and subsidies, since direct access to capital is provided (and bureaucratic procedures are not as long and strict). Additionally, on-bill finance offers ease of payment, while, as mentioned, crowdfunding platforms can enable lending money for small-scale projects.

# Financing Typologies

## Based on achieved energy savings

### What they are

Several financing tools which depend on achieved energy savings. The most prominent tool is Energy Performance Contracting (EPC). Other tools include Energy Efficiency Obligations (EEOs) and Energy Efficiency Feed-in Tariffs (EE-FiTs).

### Requirements

EPCs usually require an energy savings guarantee, which provides assurance to the building owner that the investment will pay off. To be properly implemented, they need to be accompanied by reliable estimations of energy savings and, in certain cases, measurement and verification methods.

### Challenges

ESCOs may become very indebted and, therefore, unable to access finance. Several barriers may also derive from market immaturity and difficulties in measuring energy savings. When it comes to EEOs, incentivising involved parties to maximise energy savings might be challenging, since there is no motivation to deliver more savings than the established threshold.

### How they work

Energy Performance Contracts are contractual agreements between building owners and Energy Service Companies (ESCOs). An ESCO not only covers initial costs of renovation projects, but also designs and implements retrofitting measures. The repayment occurs thanks to the savings ensued by lower energy consumption. As far as EEOs are concerned, they are applied mainly in companies and industrial infrastructure. A certain level of energy savings needs to be achieved, so that rewards are granted to the companies. Financial rewards for energy efficiency achieved thanks to renovation measures can also be provided through EE-FiTs.

### Benefits

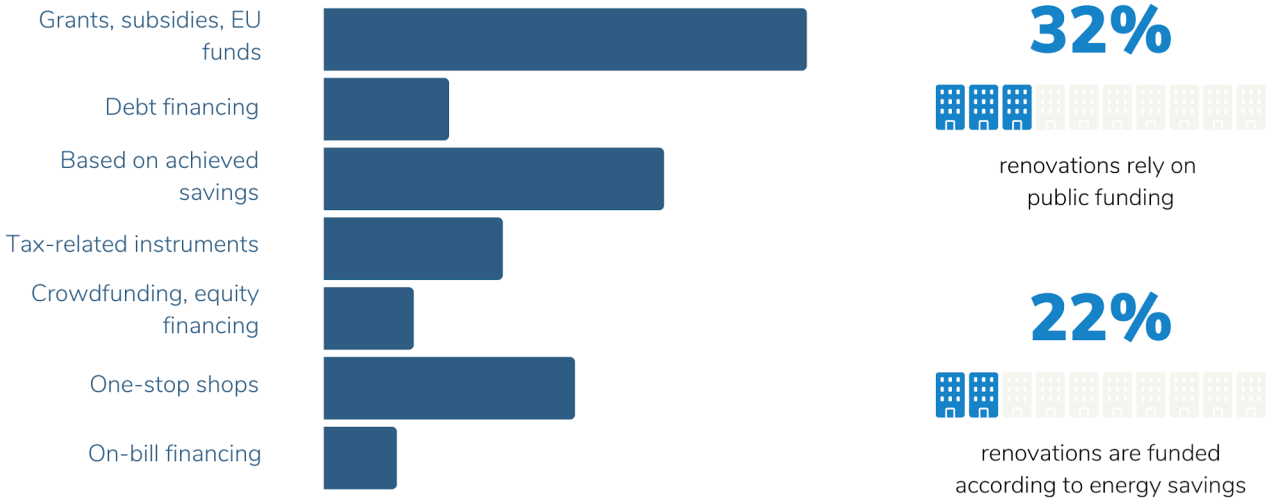
When it comes to EPCs provided by ESCOs, renovation projects are significantly facilitated, since the ESCOs offer inclusive services, technical support, and financial resources. The same is true for one-stop shops. Furthermore, project developers are encouraged to furtherly explore sustainable technologies to achieve greater savings.

# Most commonly used mechanisms

Grants and subsidies are the most common funding tools discussed in relevant literature, followed by financing mechanisms based on achieved energy savings. One-stop shops are considered as a separate category, since they provide comprehensive services supporting EE projects and do not always provide their own resources, hence they are not exclusively a financing mechanism. Relatively innovative ways of financing retrofitting actions (on-bill finance and crowdfunding) represent only a small amount of the reviewed publication. Generally, it is observed that traditional tools (grants, subsidies, tax incentives, loans) are still discussed in relevant literature more than newer mechanisms.

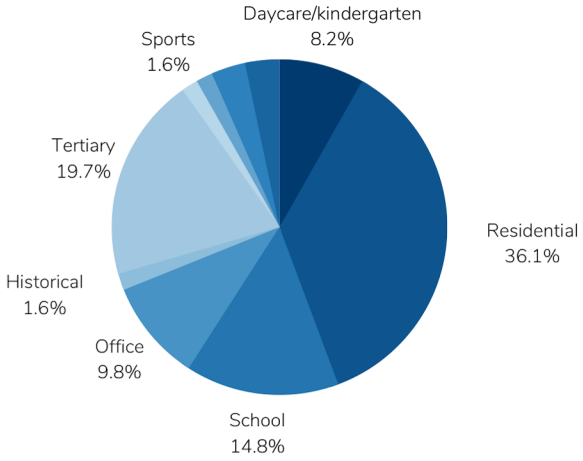
## Financing policies for building renovation

Literature review



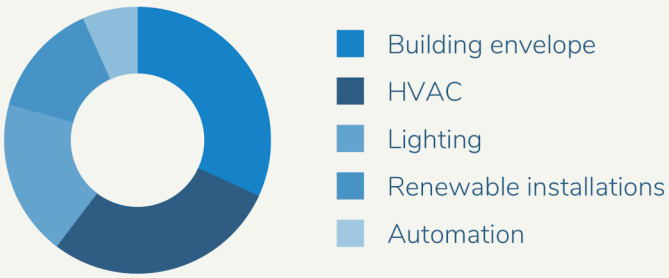
# Results from examined case studies

Although the selected case studies consider various building uses, the residential sector is the most prominent. Numerous cases considered tertiary buildings, that is to say, administrative buildings, hotels or commercial buildings (supermarkets, retail centers etc.). Educational institutions, including schools, preschool buildings, as well as day care centers, have also been renovated in quite a high percentage of the considered case studies.




The selected retrofitting measures considered building envelope interventions (wall, roof, floor insulation, as well as replacement of windows and doors), improvements of HVAC equipment, upgrade of lighting infrastructure, installations of renewable sources (mainly solar panels and biomass enabled technologies) and automated devices (sensors, as well as energy management systems).

It has been observed that renewable sources and automated systems are more likely to be financed and installed in non-residential public buildings (offices, commercial and industrial buildings). In addition, the installation of energy management systems and devices, especially sensors for lighting control, are often financed in medical buildings. It has also been observed that renovation projects which implement only one type of retrofitting measures (e. g., only lighting replacement) are more likely to be financed by one single funding source. However, most of the examined case studies applied different types of measures. Hence, different financing sources were combined.




## Rennovation trends

Renewable sources and automated systems are more likely to be financed and installed in non-residential public buildings

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