

## Financial instruments based on structural funds for energy renovation of buildings

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SOE1/P3/EO294 Rehabilita | Transnational Platform to Support Energy Renovation Financing.

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# Financial instruments based on structural funds for energy renovation of buildings

## Unit 1. Introduction



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## 0. Introduction

The following data shows some relevant figures of energy efficiency in housing renovation:

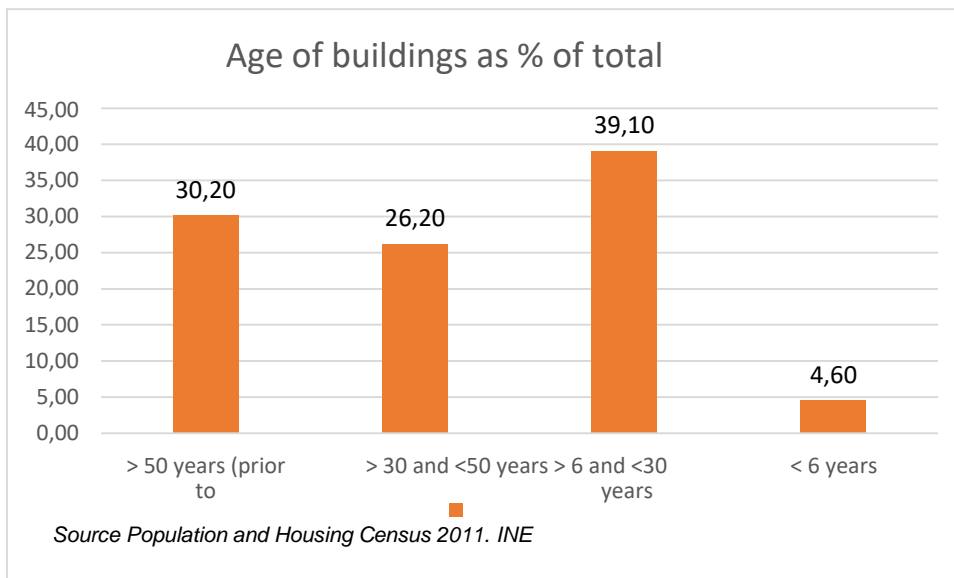
- Spain spends more than 60,000 million in primary energy each year and approximately 30% of this energy is consumed by buildings.
- Energy efficiency is essential for Spain's trade deficit, since it's a country with a high level of foreign dependency. The negative trade balance of Spain has a good part of its foundation in energy dependence, and the trade deficit is a secular macroeconomic dilemma of Spain.
- Spanish offices could reduce energy consumption by 50% in the short term
- In 10 years, an investment in non- residential buildings can be amortized through savings of 35-50% of the energy consumed. Savings in hospitals and offices are even more.
- According to GTR<sup>1</sup>, the renovation of 10 million residential buildings until 2050 can create more than 150,000 jobs in Spain.
- According to GTR, energy renovation can create a market that moves between 2,000 and 10,000 million euros per year.
- Creating a new job in EE (Energy Efficiency) and ER (Renewable Energy) means using less public resources in unemployment benefits. The GTR estimates that the public support required to create a new job in the renovation of Spanish households ranges

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<sup>1</sup> Working Group on Building Renovation

from 13,500 to 14,500 euros, while the average cost of an annual unemployment benefit is 19.991 euros per year. All this without taking into account the increase in the collection of taxes (VAT, IRPF, etc.).

The data reveal the importance of renovation, but how old are buildings in Spain? The INE carries out this statistic every ten years; the last census was made in 2011.



*Age of buildings in Spain. Prepared by INE.*

More than 56% of buildings are more than 30 years old, and only 4.6% have less than 6 years in 2011 and, therefore, has been built considering basic and current efficiency parameters.

On the other hand, more than 30% of domestic expenditure in Spanish households is currently dedicated to the consumption of water and energy.

Annual distribution of household expenses (Percentage)	Spain	
	2006	2013
Non-alcoholic food and drink	14,3	15,1
Alcoholic beverages, tobacco and others	1,9	2,0
Clothing and footwear	6,8	5,0
<b>Expenses of housing, water, electricity, gas and other</b>	<b>24,9</b>	<b>33,1</b>
Furniture, equipment and other maintenance costs	5,9	4,2
Health	2,9	3,2
Transport	14,8	11,5
Communications	2,9	3,0
Leisure, entertainment and culture	6,9	5,7
Education	0,9	1,3
Hotels, cafés and restaurants	10,0	8,3
Other goods and services	7,9	7,5
<b>TOTAL</b>	<b>100</b>	<b>100</b>

Annual distribution of household expenses in Spain. Own elaboration based on INE data.

There is a challenge arising from the **need to address energy renovation**, but there is also a **market opportunity for many SMEs** in the construction and ancillary sectors, as well as installers and electricity managers, working on more sustainable parameters, with a large component of innovation and applied technology.

But, in addition, **energy renovation can be carried out by offering financial comfort to the owners**. Domestic spending on energy is high, and projects can offer attractive results by adapting payments to the energy savings.

## **1. The need for viable financial solutions for energy renovation.**

In general, the reduction of energy consumption (without the need to reduce comfort schemes) requires changes in the use and behaviour of the users of the installations, but a good part of the potential savings requires investments. This is more relevant in actions related to renewable energy generation, which require significant investments for the required infrastructure. It is also the case of energy renovation of buildings, where even some of the actions require a high investment in relation to the savings they produce, which requires longer terms for the financial solution, and also potentially involves situations of energy and economic poverty with difficult access to credit.

**Having effective financial solutions to accompany energy renovation programs for buildings makes easier for owners to undertake investments without limiting their economic situation.** Otherwise, it will be difficult to undertake such decisions.

## **2. Preliminary financial concepts and criteria**

It will be difficult to advance in the concept and structuring of a financial instrument if we do not know some concepts and criteria beforehand.

We begin by explaining the basic differences between some financing alternatives such as the capital provided by the partners of a company (known as Equity) and the different forms of debt. Financing alternatives are accompanied by a contract setting out the conditions, obligations and rights of the parties and priority relations for collection in the event of financial problems.

Once the alternatives are known, we explain: (i) the concept of **financial leverage**, very useful for learning how to establish differentiated expectations of profitability among the various types of investors and financiers, (ii) the **debt capacity** of a project, (iii) the differences between a **financial instrument**, a **financial alternative** and a **financial mechanism**, and (iv) the **financial criteria and concepts** linked to **Energy Efficiency & Renewable Energy** (hereafter EE & ER) **projects**.

## **2.1 About Capital or Equity (shareholder contribution)**

Equity configuration is an essential aspect of any financial structuring:

- The contribution of participating shareholders or partners is only considered in the case of companies. In funds without legal personality this figure is not necessary, although there may be differences in the rights and obligations of different investors in a fund (priority of collections, subordination, etc.).
- As in any company, the general meeting of shareholders is the sovereign body where decisions are taken on the basis of majorities of shareholders with



the right to vote. This implies that the strategic aspects of the company will be decided by the property that makes up the majority of the capital. Therefore, it will very probably be necessary to delimit some relevant aspects in the partners' pact, investment and operational criteria, to delimit expectations of private returns, or to establish pacts with private investors and credit institutions.

- Equity, beyond public aid through guarantees offered in a financial instrument, is the first cushion of losses for the rest of the financing. EE and RE projects can be very well defined technically, and usually do not present substantial technical risks if we have a good technologist and a good installation. Perhaps the main risk of an energy services contract is the risk of non-payment. It is also important for the comfort of other investors and financiers to have equity as a mechanism for assuming the first losses and, ultimately, as a promoter and owner of the company. "Debt finances Equity", which is the one who asks for the debt and who is responsible for carrying out the project. For this financing decision is necessary not only to analyze the project, but also to assess the management team and the shareholder structure, and even to involve issues relating to reputational risk since financial institutions do not wish to finance certain shareholder structures made up of certain persons or companies of doubtful reputation.
- The promoters' investment in Equity also implies the idea of commitment to the development of society. In energy efficiency projects it is necessary to identify the figures of promoter and investors, and the functions and commitments of both.
- We have mentioned that debt finances Equity, but Equity also attracts debt. By this we mean that, given that Equity is a safety cushion for debt, and must provide a filter and professional management to the debt, the greater the percentage of Equity in a financial structure, the easier it will be to obtain debt, and at lower

costs.

- **Equity also brings flexibility.** Unlike debt, which has payment obligations (remuneration and repayment) established in a contract, Equity does not have unconditional payment obligations, providing the flexibility required in certain situations and project profiles.

There are several alternatives for the configuration of the Equity. The equity contribution can be made exclusively with private funds, exclusively with public funds or in co-financing with public and private funds.

It is necessary to know the advantages and disadvantages of each of the alternatives in order to make a decision.

*Private equity.* At present there are few options for institutional investors<sup>2</sup> in Equity in Spain that are specifically oriented towards this sector. Knowledge of the sector and of the operations is very important: the fund management team must be very specialized in this investment profile. Beyond the funds registered with the Comisión Nacional del Mercado de Valores (CNMV), we have placement options with private investors through "private placement"<sup>3</sup> processes, but it is currently a limited and remote option. It is precisely the limitations of private equity that we identify as one of the limitations of energy efficiency and renewable energies. The expansion of the market will attract other managers towards the energy efficiency sector and will contribute to consolidating private investment in the sector.

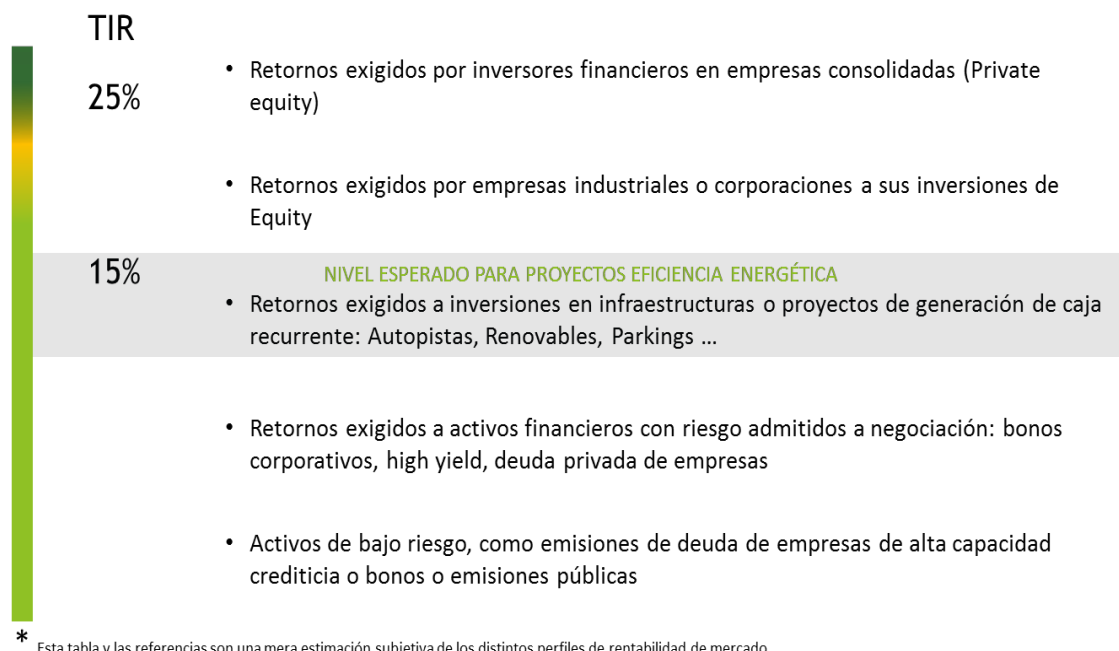
In relation to the expected returns on private capital, we estimate a return of around

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<sup>2</sup> By institutional investors we mean investment funds, pension plans, insurance companies, etc. Basically, it is there where investors and savers allocate their resources, and therefore where more resources to invest exist. These institutional investors have professional management and public supervision and regulation.

<sup>3</sup> Private placement is for direct subscription by qualified investors. There are specific regulations for this type of issue, which can only be underwritten by qualified investors due to the complexity and risks of these operations.

10-15% to be reasonable for the risk profile of these projects, similar to that of projects with good fundamentals and recurrent cash generation (*see table below*). Any attempt to achieve superior returns may involve excessive contract terms that discourage approval by the end customer. However, in the same way, it is reasonable to think that the risks must be adequately limited in order to be able to limit the expectations of profitability.



*Internal Rate of Return (IRR) required by type of project.*

**Public equity.** There is no public fund management company with a specific focus on energy efficiency, nor is there any public venture capital company with such an exclusive vocation. Now, in the private funds some of the investors are public (ICO, EIB, etc.). The existence of these public investors in private funds is still necessary, and further proof that this market is not yet of broad interest to private investors.

## 2.2 Debt (senior)

Debts have different collection priorities in case of problems; each contract will establish these conditions. Senior debt is the highest collection priority, any other will be below in this priority scheme.

Debt (i) facilitates the leverage<sup>4</sup> that allows the returns required by the equity investor to be achieved and (ii) given its lower cost in line with the lower risk assumed in relation to equity, reduces the average cost of project financing. It is necessary to consider that, ultimately, the debt finances the capital and therefore the project promoter must have sufficient experience and knowledge of the sector to provide adequate comfort to debt providers, ensuring the leadership of projects and their proper development in all terms.

Another very important aspect to consider is the approval of the risk of projects and clients. This responsibility also falls on the promoter-shareholder, although it can support this work or complement it with debt financiers.

As with Equity, there are several alternatives to debt.

*Private Debt.* It is possible to use traditional credit institutions or a securitization fund. However, the securitization fund is not something close yet. We need to "make market", so the projects could have visibility to attract more and more investors. For energy renovation projects of buildings, by size and profile, securitization is an option that is presented as an interesting solution once the market is expanded.

*Public Debt.* There are public debt funds for investment in EE & ER. In some cases, the funds are transferred to a financial intermediary, as in the case of some banks that manage funds under the JESSICA program. This debt can perfectly be integrated in the final financial structure on *pari passu* terms with private debt.

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<sup>4</sup> Leverage is synonymous with indebtedness. Debt, if its cost is lower than the profitability of the project, facilitates the achievement of the returns required by the Equity. In other words, a required return on equity of 12% does not need 12% IRR projects, if there is debt it could be sufficient with 8%-10% IRR projects.

### **2.3 Hybrid financing, quasi-equity or subordinated debt (called junior)**

This is a financing solution halfway between Equity and debt. It has aspects of both. Sometimes it doesn't have a maturity deadline, such as Equity, but has a contractually established remuneration, such as debt.

There is a wide variety of options, but all of them have some common features:

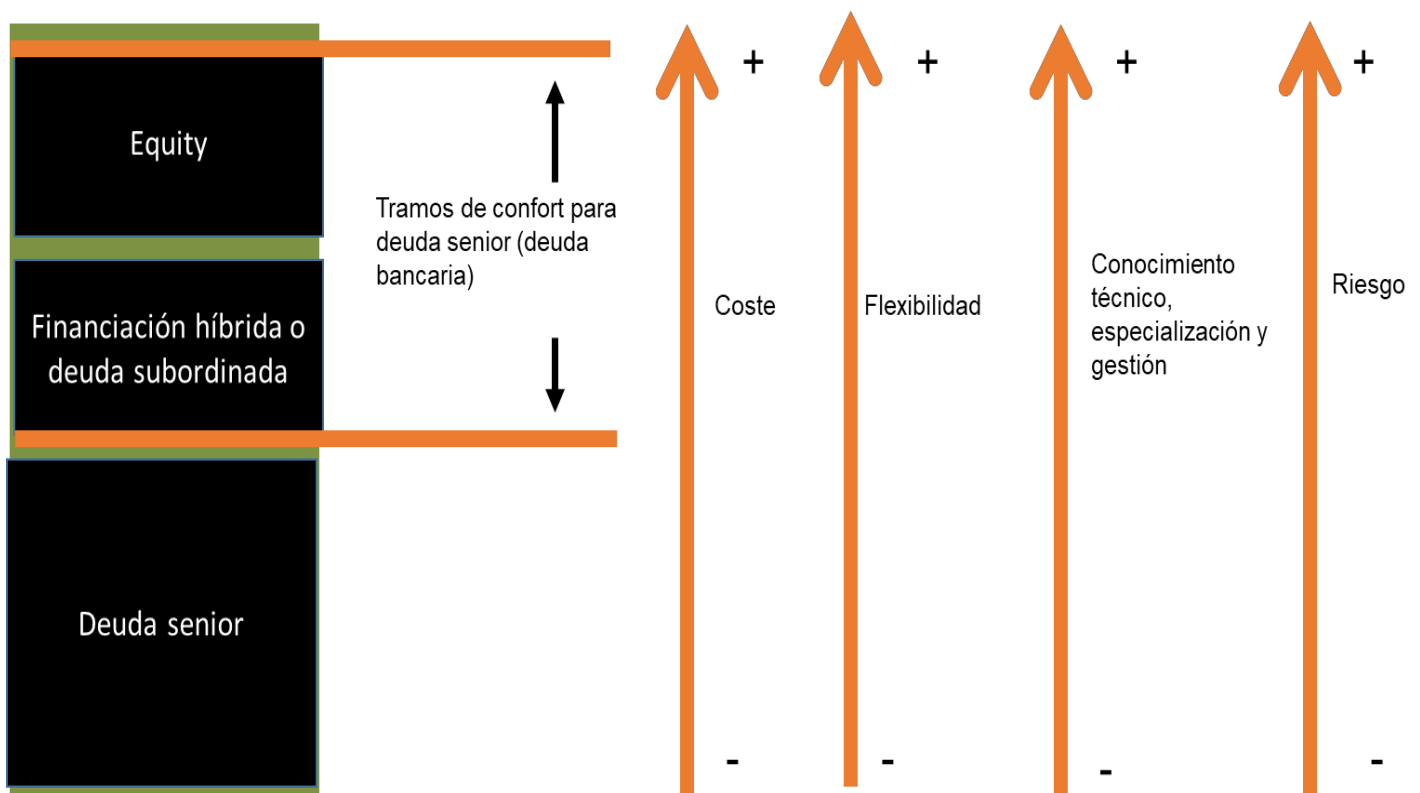
- It is more flexible than traditional debt for both retribution and repayment. Part of the remuneration can be postponed according to the results, sometimes even allowing its complete return at the end (i.e. as a bullet: a single and total repayment).
- It is more expensive than traditional debt, in line with the flexibility offered and the risks assumed.
- If the project is not successful, it will only be collection if the traditional debt has done so. It is said that in collection priority they are behind the traditional debt and only ahead of the shareholders, which is why it is also called subordinated debt.

The subordinated participation fits both in Companies and in funds without legal personality (Securitization Funds, for example), and is widely used by public institutions to finance projects and companies. For example, ENISA<sup>5</sup> makes extensive use of the Equity loan option. The reason for its wide use by public entities is that it incorporates flexibility, like Equity, but not political rights in the funded society. It also avoids the dilemma of having to value the company, since when participating in Equity it is

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<sup>5</sup> ENISA, Empresa Nacional de Innovación, is a state-owned trading company - dependent on the Spanish Ministry of Economy, Industry and Competitiveness, through the Directorate General of Industry and Small and Medium Enterprises - which, since 1982, actively participates in the financing of viable and innovative business projects. <http://www.enisa.es/>

necessary to agree on the price of the shares to be acquired, and therefore the degree of dilution of the current shareholders, which is always controversial. But it is also a comfort for traditional or senior debt, for example, banking debt, since subordination implies that, in the event that the project fails and bankruptcy proceedings have to be carried out, the bank creditors would first collect and, if there are too many resources, the subordinates could collect after them.



*Image 4. Sections of comfort, cost, flexibility and knowledge between the different financing alternatives.*

## 2.4 Leverage.

Leverage is now almost synonymous with indebtedness, but the term has a financial justification.

When debt and equity appear in a financing structure, the margin between the

profitability of the project and the cost of the debt (for the part of the resources financed in debt) adds profitability to the equity. In other words, the debt acts as a "lever" for the return on equity if its cost is lower than the return on the project, hence the term leverage.

The following formula provides a first approach to leverage<sup>6</sup>:

$$IRR \text{ Equity } \% = IRR \text{ project } \% + \left[ (IRR \text{ project } \% - Debt \text{ cost}(\%)) \times \frac{Debt}{Equity} \right]$$

Thus, an IRR project of 8%, a debt cost of 4% and a debt/equity ratio of 1 provide a return on equity of 12%.

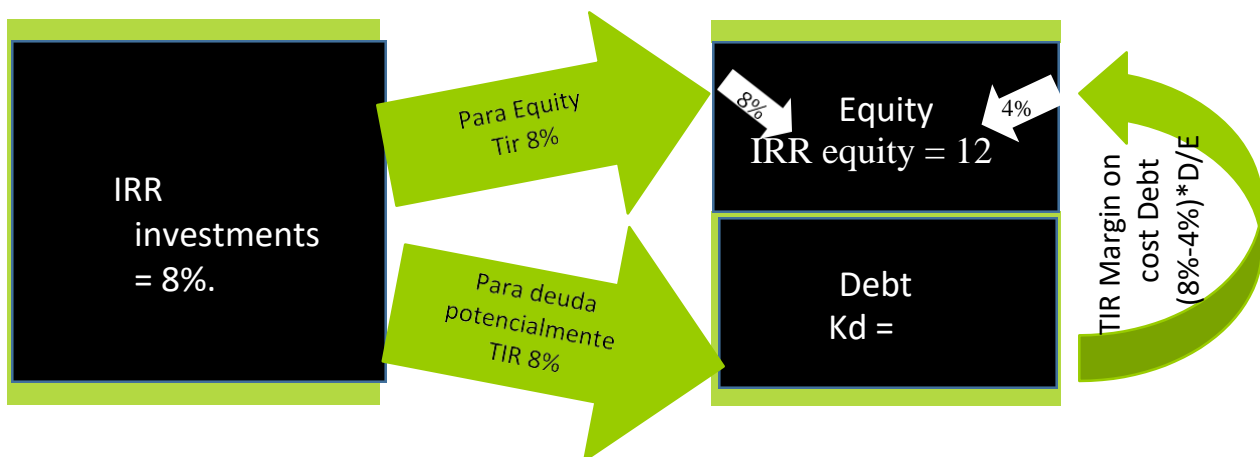


Image 5. Financial Leverage.

## 2.5 If debt is the cheapest financing, and allows leverage, what percentage of debt can we use to finance our project?

To think that bank debt, by far, is usually the cheapest financing leads us to think that

<sup>6</sup> The formula allows a first approximation because not every year there will be the same proportion of debt and equity. Consider the tax effect of the corporate tax included in the calculation of the project IRR, and the tax shield resulting from the deduction of the costs of the debt also included in the 'cost of the debt'. The IRR criterion is how profitability is determined

the more debt the better. However, debt implies unavoidable obligations and does not adapt to the reality of generating cash from projects, introducing rigidities that sometimes place limitations on viability. Debt introduces risk, and the right balance must be sought. There are many factors that can limit debt, but among them we highlight:

- The level of debt will depend on the degree of reliability and predictability of the flows.
- The level of debt will depend on the recurrent nature of the flows.

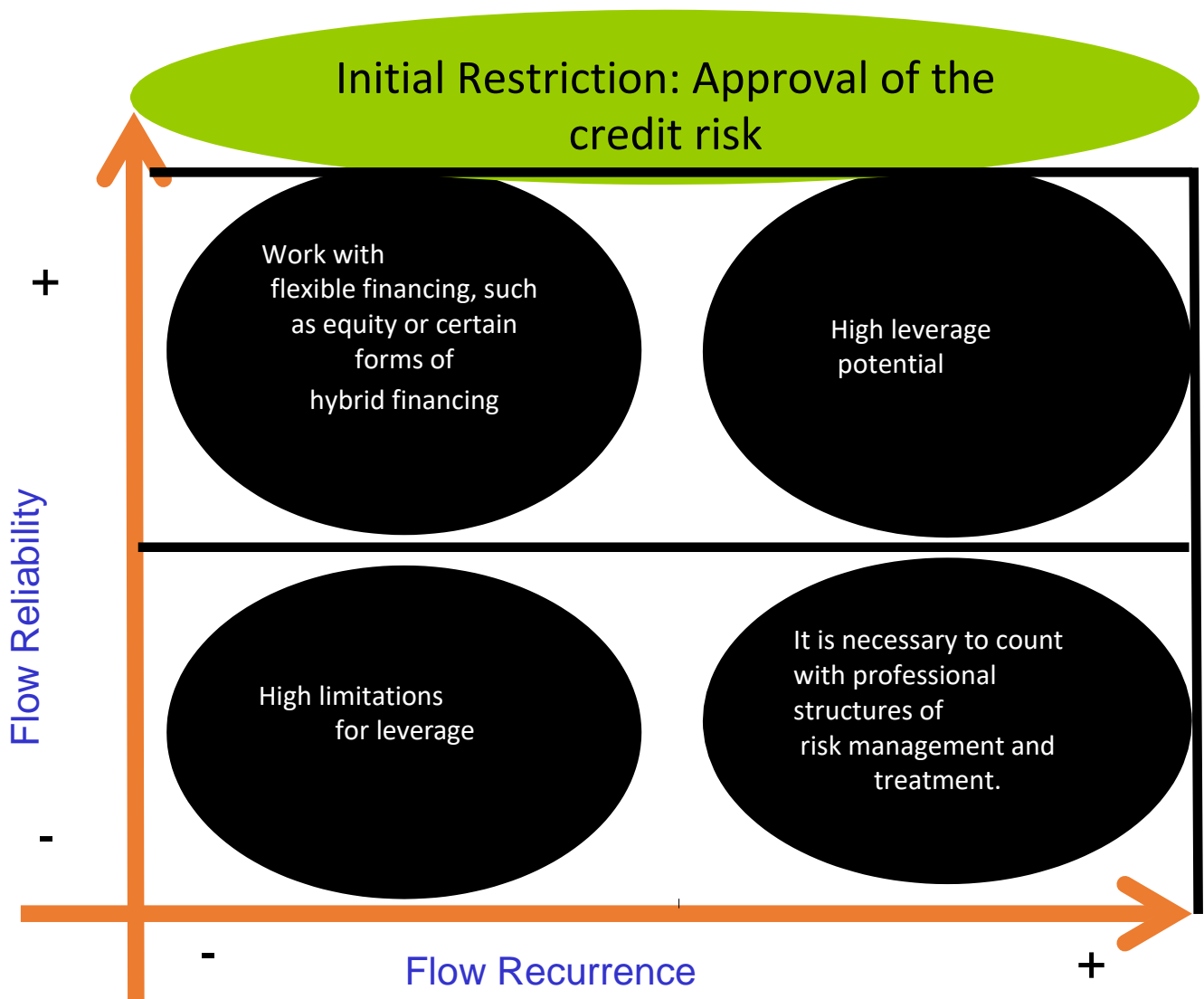
Both the degree of predictability and recurrence will determine our debt capacity.

*Remember*

*If we have a project that generates flows with monthly recurrence, very predictable, based on a firm long-term contract, and the client is fully solvent, the debt capacity is greater than if we have a project with discontinuous flows and little predictable. Contracts that involve monthly payments, with fully solvent customers, without technical risks that may imply that the customer does not accept payment for breach of contract terms, etc., means having regular income, without dilemmas, to meet periodic obligations to pay the debt. But, unfortunately, these scenarios are the least frequent. Although it is true that energy renovation may involve contracts with recurring payments, it is not always aimed at fully solvent owners and there will always be incidences, including technical ones.*

Equity (or subordinated debt) must be sufficient to cover possible losses and mismatches between cash generation and payment obligations arising from financing contracts.





*Debt capacity as a function of the recurrence and reliability of the project flows. Own elaboration*

Renovation of buildings usually includes contracts that involve periodic payments, i.e. the recurrence of collection is high, but is sometimes conditioned by a contract to guarantee energy performance or economic savings. On the other hand, especially in the renovation of residential buildings, solvency of the final recipients will be a dilemma to solve. These factors need to be analyzed on a case-by-case basis to

determine the reasonable fit between debt and equity.

## 2.6 What is the difference between a financial instrument, a financial alternative, a financial mechanism and a financing solution?

We all mention as almost synonymous concepts such as alternatives, mechanisms and financial instruments, when they are not. The following explanation of each of the terms doesn't mean that they should be assumed as "closed" concepts:

- A financing **alternative** is a way of attracting resources for a project, which implies legal and economic conditions.

*For example, a financing alternative is the bank debt or the participative loan that a public institution gives us, or the resources captured in crowd funding, etc. A financing alternative does not normally meet 100% of the financing needs, and must be supplemented with other financing alternatives in an orderly package that we call a financial structure.*

- A **financing instrument** implies several financing alternatives, private and/or public, developed through a more or less complex structure that implies different legal, risk and profitability considerations for each of the integrated alternatives. The structure is supposed to be **complete** (meet all the investment needs), **effective** (achieve the desired result) and **efficient** (do it at a reasonable weighted average cost depending on market conditions and risks). A financial instrument could integrate Equity, Subordinated Debt and Bank Debt alternatives, some of these options with a private or public origin, so that each of the alternatives plays a role and assumes differentiated risks, but between them they cover 100% of the financing.

- A **financial mechanism** can have nuances of appreciation. Generically, however, their function is to facilitate the ultimate effectiveness of a financial structure and the participation of private capital, and they often involve some form of "public aid".

*For example, a "first losses" mechanism implies that a public "alternative" assumes part of the first losses, thus facilitating the entry of private capital. In this sense, the mechanisms serve to cover the gap or market failure implied by the non-existence of private investment in a sector.*

- A **financing solution** is a concrete financing proposal aimed at a specific profile that provides an effective and viable financial solution. You can include several alternatives in a structured manner (financial instrument) or a single alternative (for example, financing through direct debt to the customer). In turn, a financing solution may include one or more financial mechanisms

Integrating all the concepts, we can say that the *financing of the energetic renovation of buildings implies diverse financial solutions for each profile, which can imply to develop one or several financial instruments that include in a structured way different alternatives of financing, private and public. The public ones play a determining role for the attraction of the private capital before the existence of market failures or situations of suboptimal, developing for it diverse financial mechanisms (first losses, subordination, etc.) that achieve as much the attraction of the private capital as the satisfaction of necessities of the final beneficiary.*

The existence of different solutions is justified by the fact that each profile (joint project and final beneficiary) needs a different instrument to respond to it, integrating different alternatives and mechanisms, in order to obtain:

- Wide-angle effect, possibility to cover the different profiles of the very different final beneficiaries (citizens, SMEs and public institutions).
- Effect "Moore's law" (law that expresses that, approximately every two years, the number of transistors in a microprocessor is doubled), exponential growth through:
  - Attracting private capital for the various solutions and/or instruments, achieving two relevant issues for them: adequate risk/return ratio and effective project attraction.
  - Attracting the final beneficiary of the measures
- To work from the *demand* side is to work from the needs side, and therefore to approach them. To work the "buy side" it is necessary to involve:
  - Business organizations and chambers of commerce. Particularly important are the sectoral associations in the case of SMEs that can collaborate in the elaboration of a more defined operational proposal, and in the final communication and dissemination to the associated companies.
  - Public institutions, providing comfort to the final beneficiaries and a commitment to execution and operation.

## **2.7 Financial criteria applicable to EE & ER**

One of the usual issues is that the financial criteria to be used are not precisely known, but also the lack of homogenization of the criteria and terms used, as well as their occasional inaccuracy.

### 2.7.1 Life cycle cost analysis

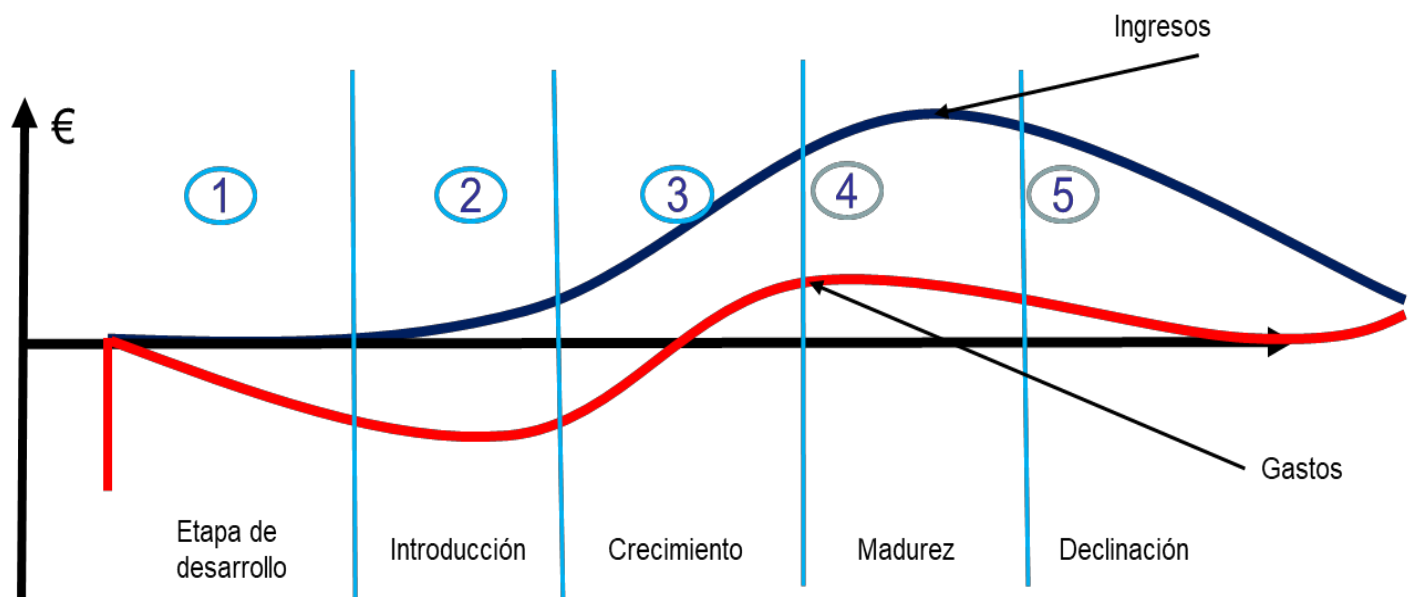


Image 7. Life cycle. Own elaboration.

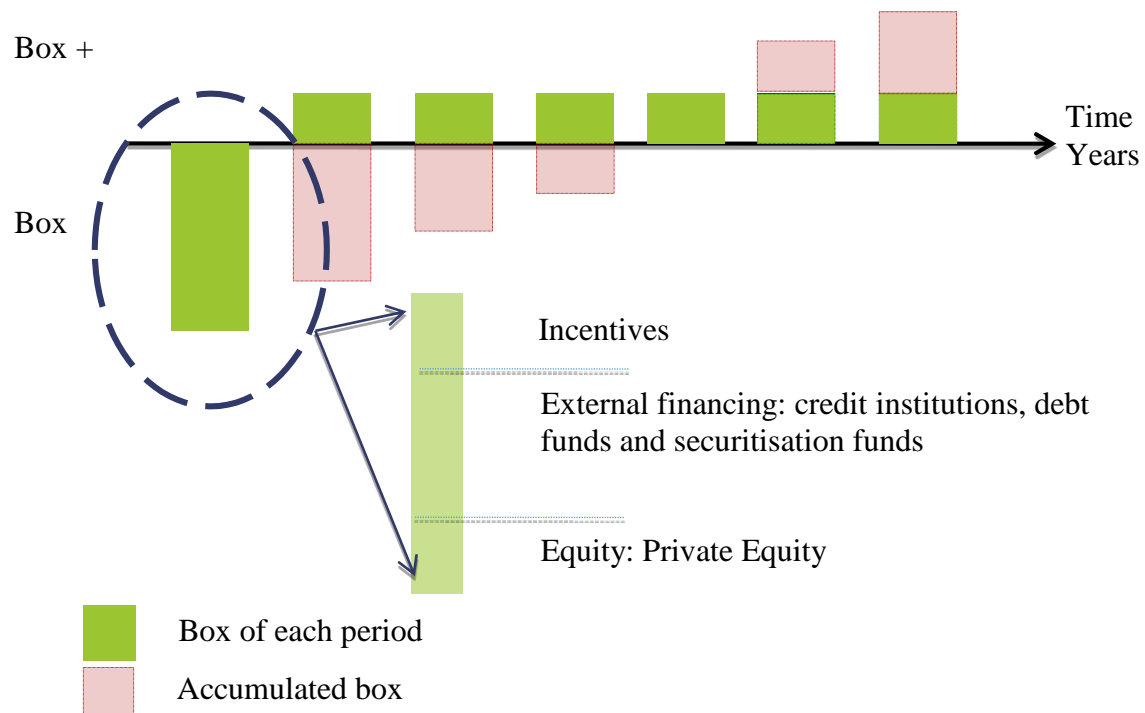
The analysis over time of the evolution of income and expenditure linked to an energy efficiency or renewable energy project is an analysis that provides key information for third party investors (see image above).

In the initial stage of development, and perhaps in the introductory stage, only expenses are generated (mainly investment expenses).

In the growth stage, the income generated must exceed the expenses of that period and compensate those of previous stages.

### 2.7.2 Project and Free Cash Flows

An EE & ER project is made up of a set of energy saving measures that provide free cash flows (FCF, Free Cash Flows) in time, usually negative at the beginning, as a consequence of the required investments, and positive at a later date.



*Evolution of expected cash flows over time.*

Positive free cash flows always result from a reduction in costs to the customer, either through energy savings provided by the energy saving measures or through lower energy supply costs (energy management, renewable energies, remote management, etc.). In both cases there is, on the other hand, an improvement in the carbon footprint.

For the purposes of the financial structure, it is not the same to reduce costs as to generate new income that can be used by financial institutions as a guarantee of payment for their financing, hence the added difficulty of EE & ER's financial

instruments. The cost reduction is a financial improvement but cannot be used as a guarantee of payment, there is no "new box" linked to the project. A new income is a financial improvement, but can also be linked as a guarantee for the payment of financing.

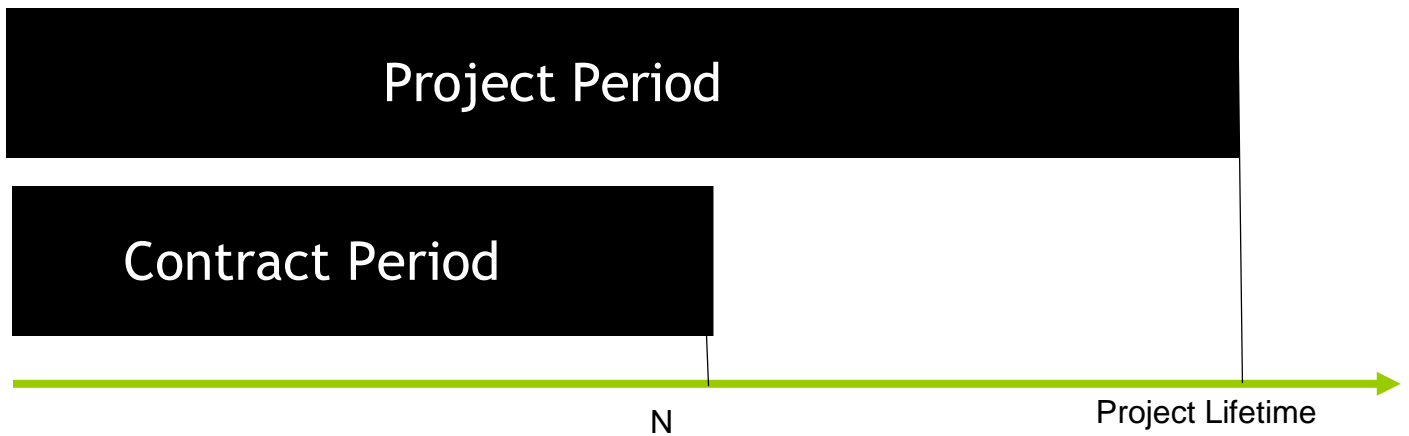
A project has a useful life during which it will generate a positive free cash flow, although this will normally decrease over time.

### **2.7.3 Project and Contract**

An EE & ER project can generate free cash flow throughout its useful life, but if it is to be financed by third parties (Third Party Financing), it will only be necessary to allocate a part of the cash flow to the return and remuneration by third parties for a certain period of time. This is the time that determines the period of the contract.

The expiration of a contract will be determined by:

- Amount of free cash flow of the project intended to pay, and transaction and management costs arising from the structure decided in the contract. We call this amount free cash flow from the contract. It is advisable to apply the Golden Rule: the payments derived from the contract must be equal to or lower than the savings (positive Cash flow pricing), in this way the owner of the facilities is encouraged to have a share of the savings, in addition to the comfort of new and efficient facilities. The golden rule, therefore, means that the owner of the facility must be paying for the contract an amount equal to or less than what he is saving, not more.
- Weighted Average Cost of Capitals of the financial structure (CMPC or WACC).



Project period vs. contract period

At the end of the contract, the beneficiary of the energy saving measures could obtain all the savings until the end of the useful life of the assets. Savings obtained beyond the contract are called “Savings Queue” (Cola de Ahorros).

A project will be more attractive for the beneficiary and for third party financing the larger the savings queue are.

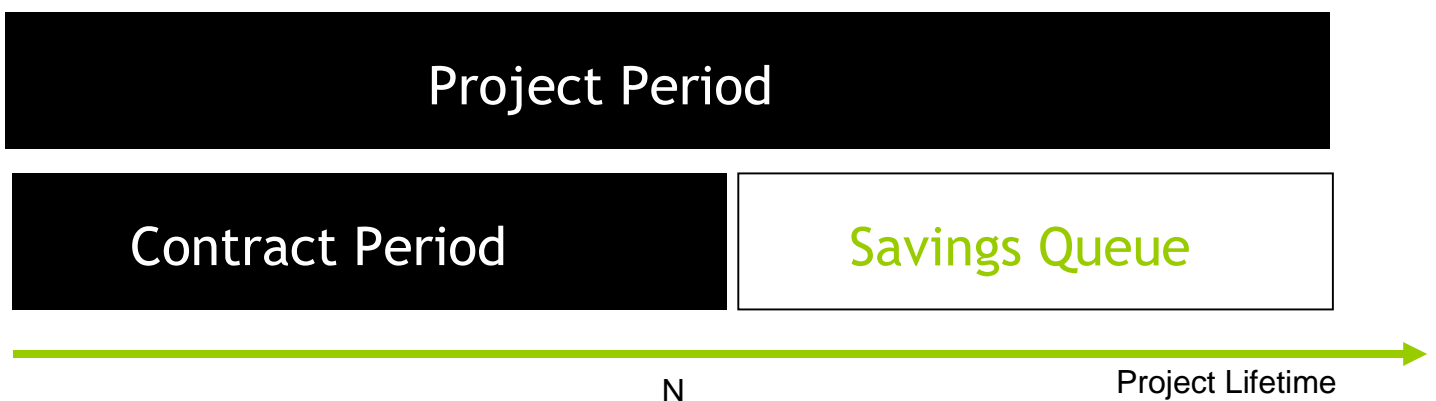


Image 10. Project savings queue.



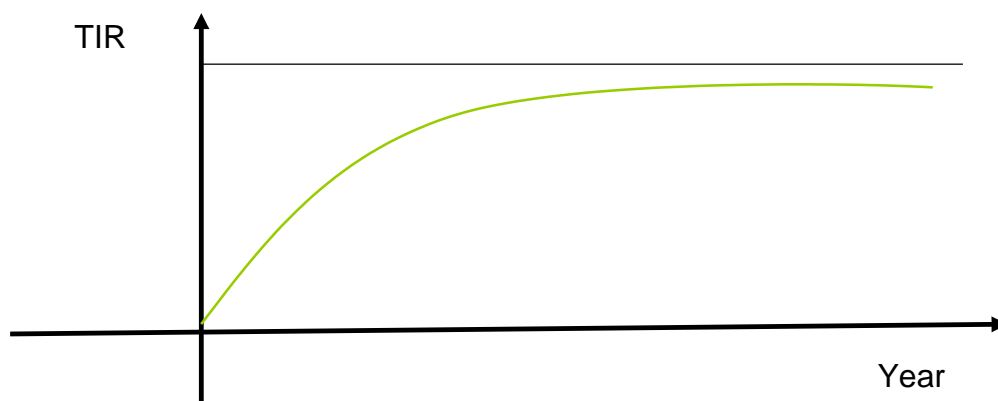
#### 2.7.4 Project IRR, Contract IRR, Customer IRR

Considerations prior to the concept of IRR (Internal Rate of Return):

- IRR is the annualized return on capital that remains invested each year.
- It is obtained as the value of the discount rate that equals zero the value of the cash flow.

$$0 = \sum_{i=1}^n \frac{\text{Flujos de Caja Libre}_i}{(1 + TIR)^i}$$

- The IRR increases if the useful life increases, until a moment arrives that it hardly does it (approx. 20 years).



*Evolution of the IRR according to the years of the contract. Own elaboration.*

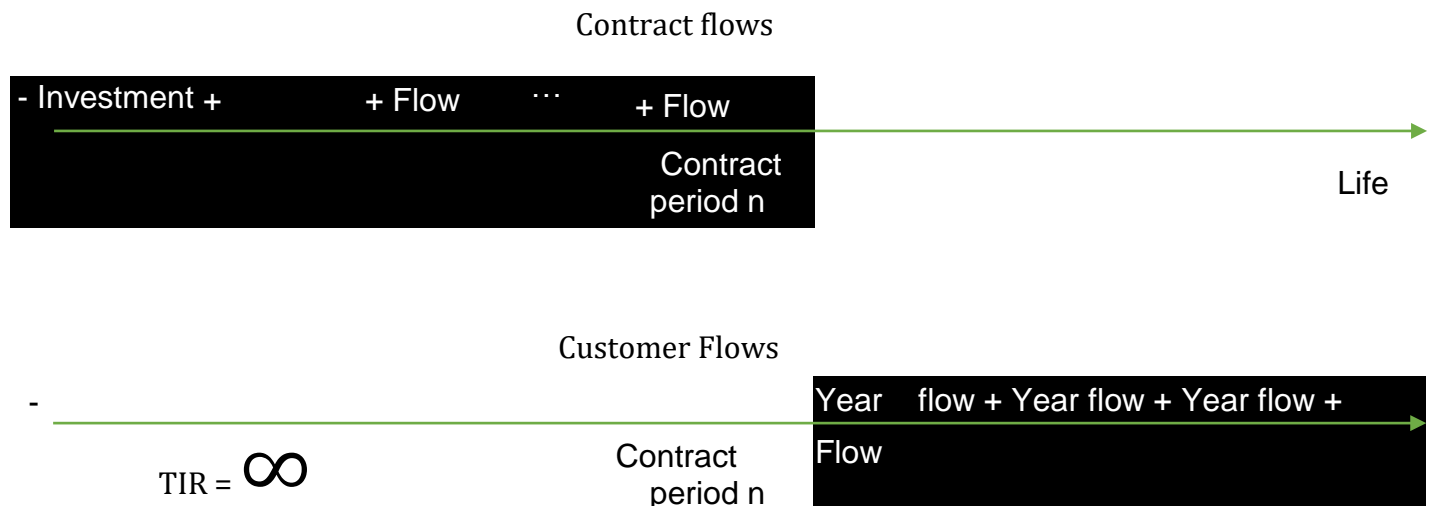
The IRR of the project is calculated on the cash flows of the project during its entire useful life. Economic significance: this is the annualized profitability that the beneficiary of the project would obtain if it were financed from its own resources.

The IRR of the contract is determined by the free cash flows of the contract during the given contract period.

- The higher the project's free cash flow for contract payment, the shorter the contract term and the greater the savings queue, and vice versa.
- If the beneficiary wishes to obtain savings from the start, he or she will extend the terms of the contract. If, on the other hand, he decides to pay for all the savings, he will have a larger savings queue.

The client's IRR is determined by the free cash flows that the client obtains throughout the useful life of the equipment.

If we assume that the customer allocates all the savings to the contract payment (zero flows during the contract), the contract and customer flow graphs would be as follows:



Project period (useful life)

Contract Period



Contract and customer flows. Own elaboration

In those cases of projects financed 100% by third parties, in which the client does not make any disbursement, the client's IRR is infinite, which means that the client benefits from savings (in addition to rehabilitated housing) without making any initial disbursement.

### 2.7.5 Contract: TIR, WACC and Discounted Pay Back

The IRR of the contract will coincide with the CMPC or WACC (Weighted Average Cost of Capitals) since the contract period has been determined according to the criteria of

Discounted Pay Back<sup>7</sup>.

- By definition, Discounted Pay Back is the period of the project that allows the return and retribution of the capital used.
- The WACC or CMPC is a hybrid between financing with explicit cost (debts) and financing with return requirements, but without remuneration established in the contract (Equity).

#### **2.7.6 The term of the Contract**

There are two identical ways of observing the contract term:

- It is the period that allows to obtain an IRR of intended contract. The IRR will make possible to satisfy the expectations of the Equity after repaying and return the debt.
- It is the period in which it is possible to repay debt and Equity, repay the debt and satisfy the expectations of a return on Equity.

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<sup>7</sup> By definition, this is the period of time that makes the value of the flows discounted to WACC and accumulated equal to zero, and its significance is the time it takes to repay and repay 100% of the financing (debt or equity). That is why the time or period of the contract is determined according to this criterion

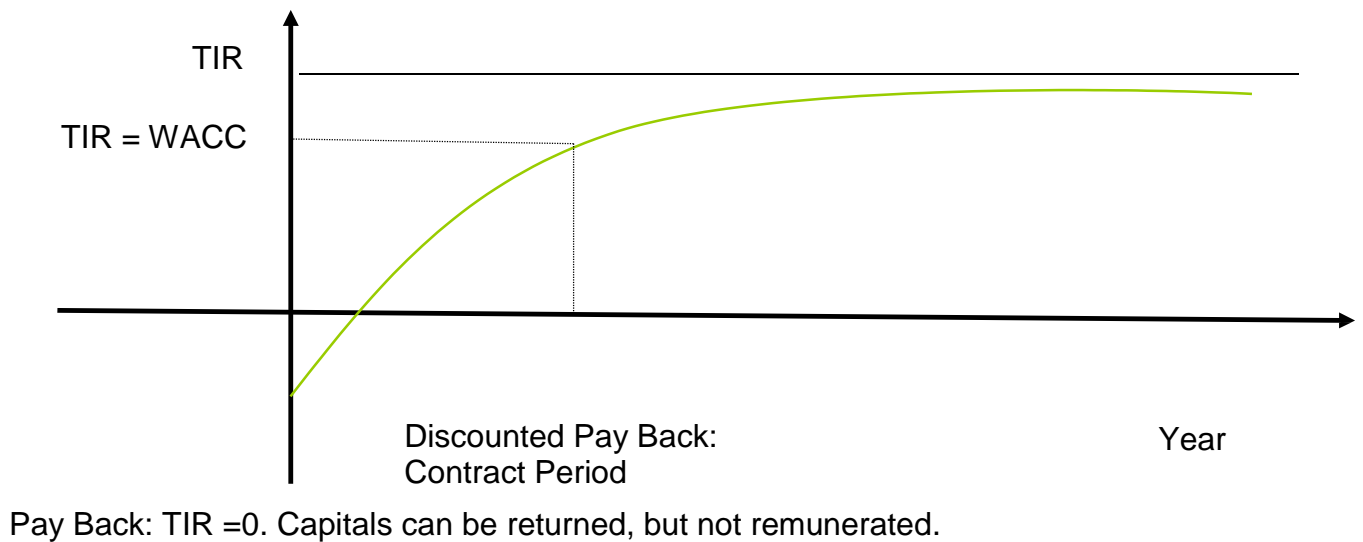


Figure 13. Term of the contract. Own elaboration.

### 2.7.7 DTI (Debt to Income) and Debt/EBITDA Ratio<sup>8</sup>

The DTI Ratio is the quotient between the value of the recipient's financial debt and the recipient's annual revenues.

- You must calculate the current ratio and the ratio that you would have after making your improvement project.
- The ratio is a discriminatory criterion for granting funding. Very high ratios make it difficult to repay the debt with current revenues.
- The financing instruments integrated in a EE & RE program should not substantially penalize the DTI Ratio; it would imply difficulties of approval and difficulties of acceptance on the part of the recipient.
- A convenient instrument for the recipient should not change the key figure DTI.

<sup>8</sup> EBITDA is earnings before amortization, interest on debt and taxes. It is therefore the result exclusively considering operating income and expenses.

$$\text{Ratio DTI} = \frac{\text{Deuda}}{\text{Ingresos anuales}}$$

However, since EE & ER projects do not provide new revenues, it is better to use the Debt/EBITDA Ratio as it includes revenues and expenses. All of the above considerations apply equally to this key figure

$$\text{Ratio Deuda/EBITDA} = \frac{\text{Deuda}}{\text{EBITDA}}$$

#### **2.7.8 Ratio SIR (Saving to Investment Ratio).**

Present value of savings divided by initial investment.

- Must be calculated for all MAES, not for individual measures
- Its value must be greater than or equal to 1. The higher the ratio, the more interesting the project will be.
- A project with a lower CRS ratio than one is not viable.
- By definition, the SIR ratio if in the numerator we place the current value of the agreed payments only during the contract period is equal to 1.
- The discount rate is always a "minimum return to demand", at least CMPC or WACC.

### **3. Barriers to the promotion of energy renovation**

There are many barriers to boosting energy efficiency in general, and energy renovation in particular, especially to achieve the potential investment intensity, and the desired effect on employment. Knowing the barriers helps in the design and structuring of the financial instrument, and is essential in the elaboration of the required ex ante evaluation.

We highlight the following barriers classified according to their origin in demand or supply:

#### **3.1 Demand barriers**

##### **A. Behavioural barriers**

- Energy efficiency is not a major concern for homeowners. Dedication to this type of project is residual and decision-making processes are very slow.
- Economic behaviors. The recognition that individuals are not always economically rational. Decisions such as how to undertake energy efficiency investments will depend on other factors other than purely economic decisions, such as: (iii) perception of other relevant factors such as comfort, health benefits, modernization of property and added value, etc.
- Decision-making in organizations. In both the private and public sectors they are frequently monitored and managed by professionals without access to management. In this way, increases in energy costs may not be the subject of analysis and debate at the highest level to consider a multi-year action and investment plan. Even technical staff sometimes consider external proposals for energy actions to be a way of questioning the work

they do, and are reluctant to change.

- Lack of leadership, references and success stories. Public and private sector leaders need to be more aware of the potential of energy efficiency to offset rising energy prices. In addition, when a strong case of success is identified, the results should be publicized to further catalyze awareness.
- Incentives divided between landlord and tenant. The tenant, not the landlord, usually pays the energy bills, which reduces the direct financial incentive to undertake renovation, unless the energy bill is included in the rental price.
- Owners often do not feel comfortable and confident with the potential results of projects, especially with commitments linked to any financial instrument. Awareness, communication and marketing are a priority on which sustain the demand, especially in buildings.

## **B. Financial barriers**

- There are other priorities for the use of own resources and debt capacity. Owners always have other preferential uses. Companies often have a lot of debt, and debt capacity is limited by ratings. If we want to have viable financial instruments, we must have off-balance-sheet options which do not involve the operator financially.
- Expected returns on capital. These expected returns are higher than debt costs, as a natural consequence of the risks assumed by the capital, and not assumed by the debt. However, the owners make a linear comparison between the cost of capital and the cost of debt, without perceiving the advantages of capital in terms of flexibility (no established remuneration and return), risk (the capital assumes all in relation to the projects, the debt only the risk of non-payment), priority of collections in case of bankruptcy (the capital is always the last to collect, which is a safety cushion for the



debt), monitoring and management (the capital decides about the management and its involvement in it, the debt has nothing to do with the day to day), etc.

### **C. Legal barriers**

- National regulatory codes on the energy performance of buildings should support energy efficiency in all types of buildings. Energy certificates are mandatory, and need to be applied under a standardization process that contains relevant and reliable information on all aspects involved.

## **3.2 Offer Barriers**

### **D. Financial barriers**

- Many energy efficiency investments have risk-adjusted returns that do not meet minimum capital requirements. In many occasions the demands of Pay Back are from 2 to 4 years, and very few projects overcome these barriers.
- Practical irrelevance of alternative financing to banking. Increasing the availability of non-bank financing alternatives (Investment Funds, Crowd Funding, access to capital markets, Green Bonds, Investment Vehicles, etc.) would have an enormous impact on the supply of sustainable investments, and would reduce banking dependency. The reduction of this dependence is important because banks are not very active in financing this type of project with a certain technical and legal complexity, and require an understanding of the risks involved. Banks cannot be in the day-to-day running of projects and need to understand that whoever does it is capable of bringing them to fruition.
- Many projects require small amounts of investment. Large projects can

find many financing alternatives, some of them in a personalized and structured way. On the contrary, small projects have fewer alternatives and often require standardized solutions due to initial transaction costs, making it impossible to develop customized alternatives for each case. Credit risk analysis (solvency assessment) should also be standardized through a scoring process<sup>9</sup>. In these cases, if a more structured proposal is desired, it is necessary to group projects until a minimum amount of capital is reached that justifies the previous technical assistance work (consulting tasks prior to the decision to invest or finance), and it is advisable to standardize as much as possible the processes and designs to reduce as much as possible the transaction costs of this technical assistance. This may be the case for energy rehabilitation projects for buildings.

- High transaction costs. EE & RE projects tend to have high transaction costs, both to make them attractive to owners and to generate comfort for private capital. Energy audits, due diligence, and financial structuring are the main transaction costs.
- Energy efficiency projects do not generate a new box (revenue to be collected), they provide savings. The "new" box is often used as a guarantee or collateral for financing. In the case of energy efficiency projects, this possibility does not exist as it is not possible to intercept new differentiated revenues. It is true that savings tend to be firm and well-founded, but the guarantee scheme for financing must be based on factors other than the interception of new income.
- It is difficult for an investor-financier to provide 100% of the investment needs, which is reasonable especially in cases where no corporate or personal guarantees of the owner of the facilities are incorporated. It is

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<sup>9</sup> The rating is the result of a scoring. Scoring is a risk assessment based on ratios

therefore necessary to structure funding with different funders, and probably each of them with a different approach to risk-taking, rights and obligations.

- Equity gap. There are often market limitations to obtain the necessary equity for these projects, with the needed flexibility. Capital, not debt, is flexible in payment obligations. The presence of capital in any financial structure conveys the idea of commitment, management and leadership over the project, assumption of the first steps and facilitates access to debt. Capital should be considered the keystone of any financial structure.
- Financial risks should be considered as the main risks of energy efficiency projects. Investors and financiers link their funding commitments to owners' ability to pay rather than to other project-related factors. The additional problem in these cases is that in many cases the size of the projects does not justify a very detailed and elaborate credit risk analysis (risk of non-payment), and it is necessary to rely on a standardized and very basic process (scoring), as in the case of energy renovation of residential buildings.
- Energy efficiency projects involve unknown technical aspects for investors and financiers, who do not have the capacity and tools to understand the projects, much less to manage them.
- Bank regulation. The current banking regulation (Basel III) is more capital-intensive and limits banks' interest in this type of project with long return periods and, on occasion, based on contracts with scarce personal or corporate guarantees.

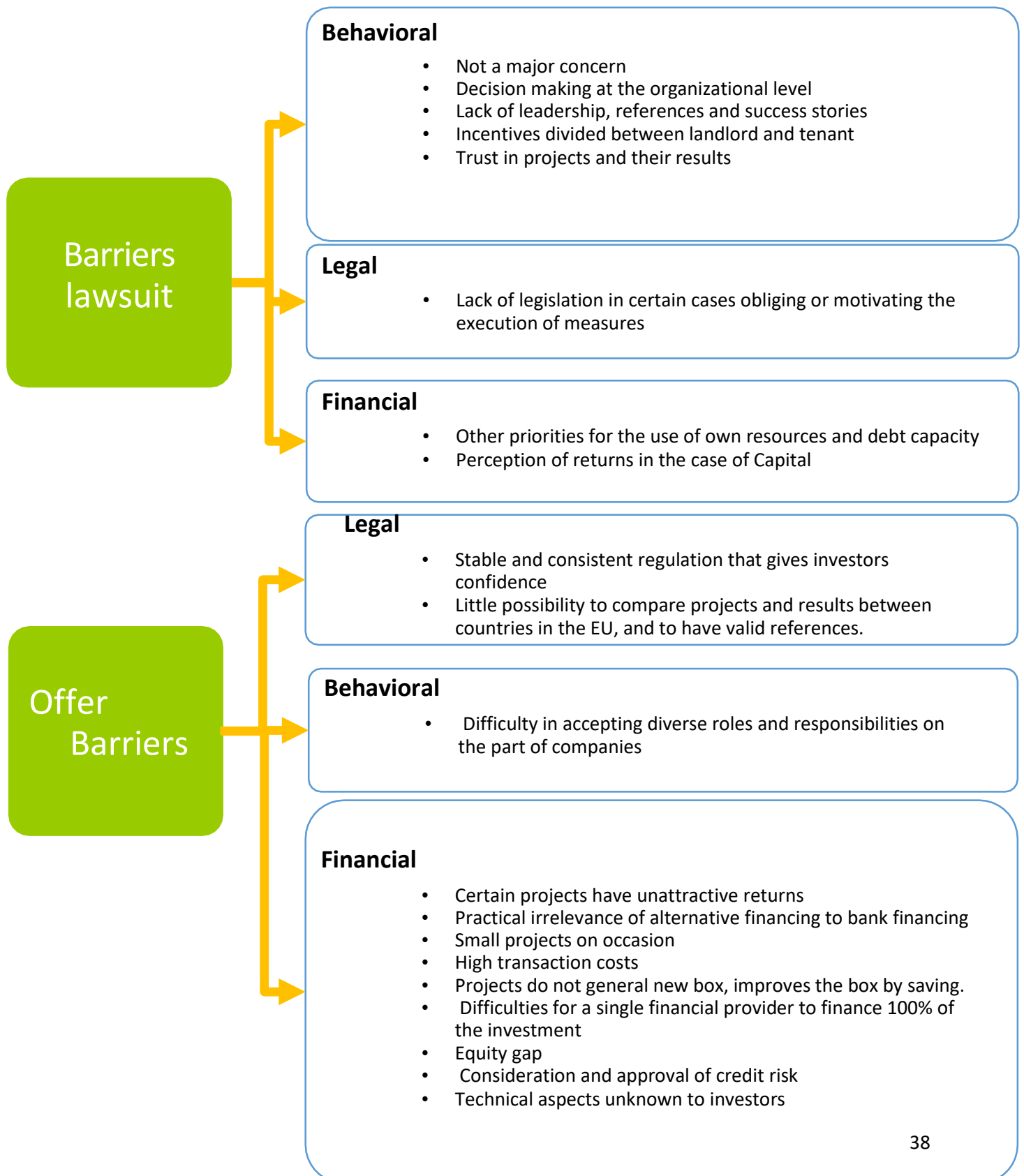
#### **E. Legal barriers**

- Lack of uniformity, strength and stability in regulations, including building

regulations, energy certification of buildings and energy performance certificates. Returns on energy efficiency are long, sometimes even in excess of 20 years, and a regulatory framework robust, stable and consistent over the long term that eliminates risks is vital to investor confidence. It is equally important to the facility owner.

- Lack of a more affordable comparative framework between countries of the European Union. Its existence could facilitate replication of success stories, and develop a single market for energy efficiency that could involve intensive access to private investment and reduction of transaction costs.

*Scheme of barriers to energy rehabilitation (below).*



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*The content reflects only the point of view of the authors and therefore in no way represents the official opinion of the Programme's management bodies.*

## Financial instruments based on structural funds aimed at energy renovation of buildings

### Unit 2. The European Union's structural funds. The European Framework 2014-2020: the ex ante study



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## 1. Introduction

The programs making up the European framework 2014-2020, and their planned amounts, are as follows:

	Structural Funds 351,800 million €EU/approx. 38,000 million € (España)
EU Funds 2014- 2020:reorienta tion to growth	Horizon 2020 European Research Program for innovative companies and projects (79,4 billion €)
	COSME: Program for the Competitiveness of Enterprises and SMEs (€2.3 billion)

The European Structural and Investment Funds (ESIF) are funds that work together to support economic, social and territorial cohesion and achieve the objectives of the European Union's (EU) Europe 2020 Strategy for smart, sustainable and inclusive growth.

The funds making up the IEE funds program are as follows:

- European Regional Development Fund (ERDF)
- European Social Fund (ESF)
- Cohesion Fund (CF)
- European Agricultural Fund for Rural Development (EAFRD)
- European Maritime and Fisheries Fund (FEMP).

Of these, three funds make up the EU's cohesion policy: the ERDF, the ESF and the CF. All regions in the EU are eligible for ERDF and ESF funding, but only the less developed



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regions are eligible for CF funding. The funds available for EU policy for the period 2014-2020 amount to EUR 351.8 billion.

Two additional funds, the EAFRD (under the common agricultural policy, EUR 85 billion) and the MEFP (under the common fisheries policy, EUR 6.5 billion), are specifically earmarked for the needs of rural and maritime regions respectively.

The budget for these funds can be complemented by the European Strategic Investment Fund<sup>1</sup>, announced in November 2014.

All the above funds are earmarked for the EU's objective of economic, social and territorial cohesion, as laid down in Article 3 of the Treaty on European Union and Article 174 of the Treaty on the Functioning of the European Union.

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<sup>1</sup> EFSI Fund, managed by the EIB, is the instrumentation of the popularly known Juncker Plan.

## 2. The new orientation of the 2014-2020 framework

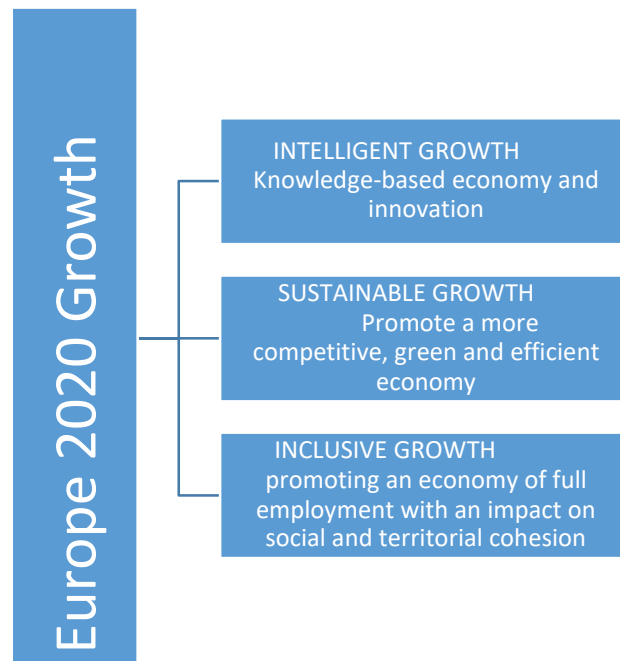
### 2.1 Developments in strategic scope, management and governance

The following table shows the main differences in strategic definition and coherence between funds in the current framework and the previous one.

2007-2013	2014-2020
Strategic guidelines of each region for the cohesion policy. The region's strategic guidelines for rural development	Common Strategic Framework covering the five IEE Funds.
The National Strategic Reference Framework mainly covers the three cohesion policy funds, and the European Commission only formally approved parts of it. The national strategic plans covering the fisheries and rural development programs prepared by the Member States in close cooperation with the Commission and the Member States.	The Partnership Agreement covering the five IEE Funds and most of its items require formal approval by the Commission, even in the case of amendments.
Different content of the programs of the cohesion policy, the EAFRD and the MEWF.	Set of basic and common elements for all IEE Fund programs.
Separate programs for ERDF (and CF) and ESF.	FSE-FEADER (or FSE-FC) which can also be financed by several funds.

The reform of the Structural Funds for the 2014-2020 programming period aims to maximize their contribution to the Europe 2020 Strategy (common strategic framework). This strategy defines three general socio-economic objectives for which the European Union will work during the period 2014-2020:

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The new regulatory framework has created new incentives for Member States to work on EU priorities and thus maximize the results of European Union funding, primarily through the following mechanisms:

- Performance and reserve framework.** Permanent monitoring of progress towards established objectives and targets, for which a performance framework based on a series of indicators must be defined beforehand and secondary objectives as well as realistic and measurable targets must be established. Each year, updated information on progress will be provided. Towards the second half of 2019, the Commission will review the performance of these programs on the basis of the annual implementation reports. For those programs and priorities which do not meet the intermediate objectives, Member States shall propose a reallocation of resources between the priorities and intermediate objectives they have achieved, in line with the requirements of thematic concentration and minimum allocations. Whenever there is evidence, based on financial or

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performance indicators, of serious errors committed in the achievement of an intermediate objective, the Commission may suspend all or part of the interim payments for that priority. Financial corrections may be applied at the end of the programming period if there is a serious deficiency which prevents the achievement of the objectives.

- **Ex ante conditionalities.** In order to ensure that Member States meet the necessary conditions for IEE funding, the Regulations set out a **number of institutional, political and legal requirements (ex ante conditionalities)** which should in theory be met before partnership agreements and programs are submitted. Ex-ante conditionalities may be thematic (linked to specific investments or EU priorities, as set out in the relevant fund rules and regulations, e.g. existence of a general transport plan for investment in transport) or general ex-ante conditionalities (not linked to specific investments or EU priorities, e.g. existence of administrative capacity for the implementation and enforcement of gender equality policy and legislation in the field of IEE Funds). Member States must assess whether the ex-ante conditionalities applicable to their programs were met, and they had to draw up a plan defining the actions undertaken to ensure that they were met by 31 December 2016. The Commission also has the authority to decide, when a program is adopted, whether to suspend all or part of an interim payment allocated to the priority of a program, depending on the completion of those actions.

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- **Conditionality linked to sound economic governance.** In order to ensure that IEE funds are used in line with established priorities, Member States should take into account (i) national reform programs, where appropriate, (ii) the latest relevant country-specific recommendations, and (iii) any relevant Council recommendations, including those based on the Stability and Growth Pact, and economic adjustment programs.
- **Financial instruments.** IEE Fund programs should contribute to achieve the objectives of the Investment Plan<sup>2</sup> by making more efficient use of funding and doubling the use of financial instruments (FI) over the period 2014-2020 compared to the previous period. This will be facilitated by the new rules adopted for the 2014-2020 financial instruments aimed at supporting and encouraging their use as a more efficient and sustainable means of EU funding. Member States may use financial instruments in relation to all thematic objectives covered by programs and for all Funds, provided that this is effective and efficient. The new framework also contains rules for combining financial instruments with other types of financing, mainly grants.

The connection with the European 2020 strategy must therefore be maintained throughout the implementation phase. If new relevant recommendations specific to the countries for which assistance from the IEE Funds is required are identified, the Commission may request a Member States to make the necessary adjustments to their partnership agreement and operational programs. But perhaps the most important developments for the 2014-2020 framework in relation to financial operations are:

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<sup>2</sup> The Investment Plan for Europe aims to remove barriers to investment, provide visibility and technical assistance to investment projects and make smarter use of new and existing financial resources.

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- **Greater scope** with the extension to all the thematic objectives and priorities foreseen by the IEE funds.
- **From incentives to financial instruments** (hereinafter FIs). Progressive elimination of subsidies, and their replacement by FIs, giving them the strength, intensity and complementarity with private funds to address a large market that would otherwise be impossible in a proper framework of incentives.
- **The need for an ex-ante evaluation.** It is mandatory to carry out an analysis that justifies the need to establish a specific financial instrument, its structure, its implementation, its management, etc.
- **Synergies and complementarities** are established **between FIs and other types of aid (subsidy)**, with the aim of avoiding double financing and full compatibility with FIs implemented at European level.
- **Incentive effect**, 100% financing from IEE funds. National co-financing is not necessary in case of contribution of the Operational Program to a European level FI.

## 2.2 Thematic objectives of the new framework

The "common strategic framework" identifies the main thematic objectives for the EU, which are as follows<sup>3</sup>:

1. Promote research, technological development and innovation.
2. Improving the use, quality and access to ICTs.
3. To improve the competitiveness of SMEs in the agricultural sector (in the case of EAFRD) and in the fisheries and aquaculture sector (in the case of MEWF).
4. Favour the transition to a low-carbon economy in all sectors.

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<sup>3</sup> [http://ec.europa.eu/regional\\_policy/en/policy/how/priorities](http://ec.europa.eu/regional_policy/en/policy/how/priorities)

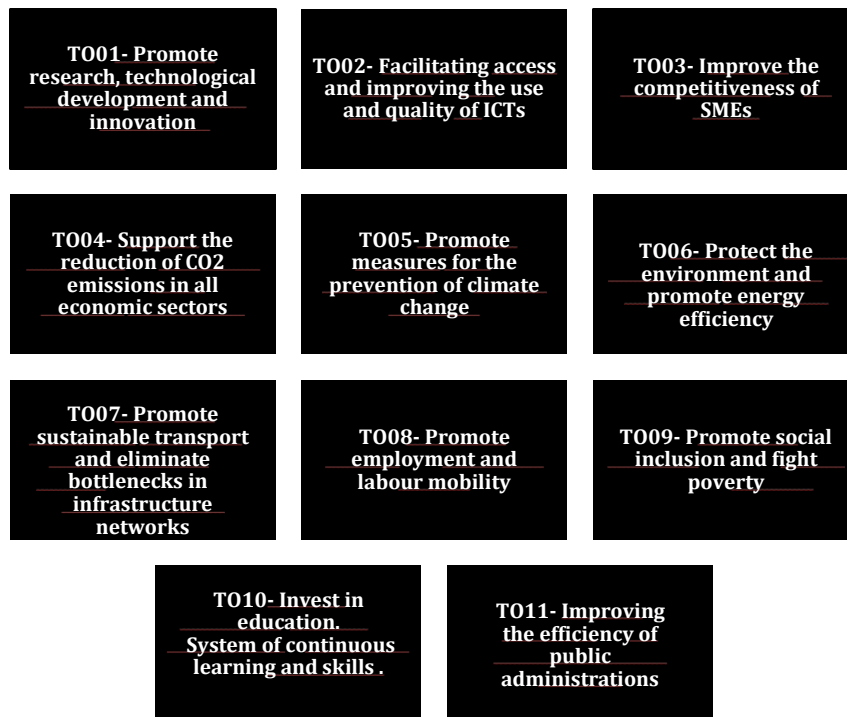


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5. Promote adaptation to climate change and risk prevention and management.
6. Conserve and protect the environment and promote resource efficiency.
7. Promote sustainable transport and remove bottlenecks in critical network infrastructure.
8. Promote sustainability and quality in employment and encourage labour mobility.
9. Promote social inclusion and combat poverty and all forms of discrimination.
10. Invest in education, skills development and lifelong learning through the development of education and training infrastructures.
11. Improve the institutional capacity of authorities and stakeholders and the efficiency of public administration.

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## EU THEMATIC OBJECTIVES



*Image 0. EU thematic objectives.*

*Prepared by the authors on the basis of information from the European Commission.*

At the same time, these European objectives were specified for each country, e.g. the Association Agreement signed by Spain with the EU<sup>4</sup>. Subsequently, each of the intermediate bodies has to make its specific proposals. The main intermediate bodies are the governments of the Autonomous Communities, but they are not the only ones. For example, Andalusia has drawn up the Andalusia 2014-2020 Economic Plan (Agenda for Employment and Competitiveness Strategy) and the Intelligent Specialization Strategy (Ris3 Andalucía), which has subsequently been specified in the Operational Program (OP) for each of the Community structural funds (ERDF, EAFRD and Social Fund),

<sup>4</sup> <http://www.dgfc.sepg.minhafp.gob.es/sitios/dgfc/es-ES/ipr/fcp1420/p/pa/Paginas/inicio.aspx>

and from which, likewise, a series of horizontal and sectoral regional planning instruments for the period 2014-2020 will be hung, such as, among others, the Strategy for the Internationalization of the Andalusian Economy, the Industrial Strategy of Andalusia, or the Innovation Strategy of Andalusia. Each intermediate agency should develop a similar strategic and programmatic structure.

In addition to those linked to the strategic objective of sustainable growth (i.e. from T4 to T7), T4 refers directly to this priority. The Spanish Association Agreement has defined several proposals for intervention in relation to this objective; one of them relates to energy efficiency and the renovation of buildings: "More efficient use of natural resources: promoting energy efficiency". It cites the Guide for Financing Building Renovation<sup>5</sup> as a reference for ERDF funding of energy efficiency investments in buildings, and for this, among other things, points to the need to establish a strategy with clear objectives and a long-term perspective, not an implementation of isolated measures. With regard to financing, this proposal sets out:

- **Where investment in a low-carbon economy produces public and/or private benefits, consideration shall be given to the use of a financial instrument combining public and private financing.** The design and appropriateness of financial instruments shall take into account the size and risk assumed by the private sector, the benefits arising from the use of financial instruments, and their appropriateness of this investment, the capabilities of the beneficiary, the manager and other investors.
- **For social housing or in the case of significant renovation, non-reimbursable aid may be applied on the basis of duly identified energy poverty criteria and ambitious levels of energy savings.**

☐ **In the area of private housing investment, the financial instruments used**

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<sup>5</sup> [http://ec.europa.eu/regional\\_policy/en/information/publications/guides/2014/financing-the-energy-renovation-of-buildings-with-cohesion-policy-funding](http://ec.europa.eu/regional_policy/en/information/publications/guides/2014/financing-the-energy-renovation-of-buildings-with-cohesion-policy-funding)

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should **fully integrate cost savings and comply with State aid rules. A timetable should be established to reduce/substitute an eventual aid component in the case of private housing finance schemes before the end of 2017.** In this respect, an ex-ante evaluation will have to be carried out which will serve as a basis for defining the appropriate mix of grants and loans, as well as the type of beneficiaries. The European Commission will support the improvement of administrative capacity in this area through specific programs and funding lines (ELENA Funds, etc.).

- **The Managing Authority may identify specific target groups or define different levels of support depending on the characteristics of these target groups. Operational programs shall explore the definition of target groups on the basis of energy poverty criteria and, where appropriate, prioritize support to this sector of the population.**

## 3. Financial instruments

### 3.1 What is a Financial Instrument in the European Structural Funds scheme?

In addition to the above-mentioned considerations on Financial Instruments (FIs), we have to add some important features in their consideration by the Structural Funds. <sup>6</sup>

- They are reimbursable instruments, the resources remain in the region and are reinvested increasing the financial and budgetary sustainability.
- They provide a leverage and multiplier effect, favoring and encouraging the participation of private capital.
- They provide the initial liquidity for new investments. Allow to obtain financing before starting the project.

### 3.2 Why set up a FI with IEE funds (ERDF, ESF, CF, EAFRD, FEMP)?

There are several factors that motivate its implementation:

- Facilitate access to finance/credit for SMEs.
- Cover a market failure.
- Develop more ambitious projects, using special financial mechanisms of risk, guarantee or collateral or, simply, with a more attractive interest rate.

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<sup>6</sup> <https://www.fi-compass.eu/video/developing-action-plan-esif-financial-instruments>

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- Favor the excellence of projects, and through excellence facilitate the repayment of investments.
- Create an additional investment portfolio, expanded by successive reinvestments, which is achieved with the revolving effect of the funds, i.e. the subsequent reinvestment once they have been returned.

The key factors for developing a successful FI are to achieve sufficient critical mass, to have scale and for projects to generate new income or cost savings in order to ensure repayment of the investment. In small-scale projects such as individual housing renovation, "bundling" and standardization are very important both to reduce transaction costs and to achieve a scalar effect that makes it viable.

### **3.3 Implementation, management and investment options**

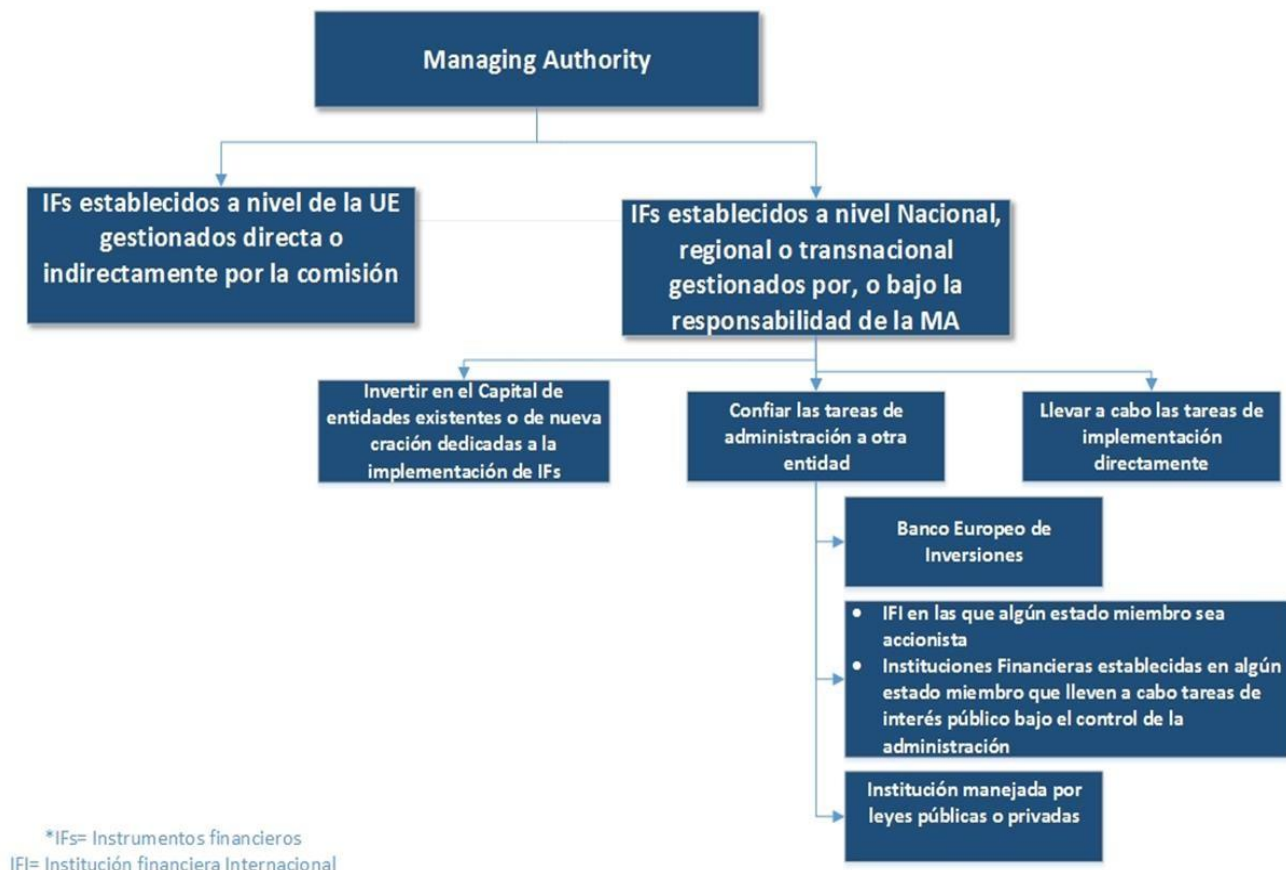
The methodology developed by the EU for ex ante evaluation sets out the possible governance options for the financial instruments developed, including their implementation alternatives.

The configuration of financial instruments implies the choice of the various implementation options, the types of financial instruments, and the financial alternative chosen, i.e. Equity, Subordinated Debt (Quasi-capital), Debt or Guarantees.

#### **3.3.1 Intermediaries**

The options for implementing financial instruments are set out in the methodology proposed for the preparation of the ex ante evaluation of financial instruments, which is summarized in the following table:

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There are four implementation options:

- Contribute resources from structural investment funds (ERDF, ESF, etc.) to the financial instruments developed by the EU Commission itself and managed directly by it.
- To invest in the Capital of a new or existing entity, which is destined to the implementation of financial instruments.
- Entrust the implementation to another entity or institution, usually a National or Regional Development Bank, an International Financial Institution (IFI) or the European Investment Bank (EIB) itself. This institution, in turn, can be the manager of a fund of funds or directly manages a specific financial instrument or product, in this case acting

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as a direct financial intermediary. The implementation can also be entrusted to an entity, both public and private, such as Agencies, Public-Private Partnership Entities, Commercial Banks and other entities.

d) It is directly assumed by the managing authority (MA).

*Any implementation option is valid, as long as it demonstrates an effective answer to the following issues to be considered:*

- 1. Achieve the greatest possible effectiveness and execution, contributing to the achievement of established strategic objectives and challenges.*
- 2. Take into account technical and administrative capacities, as well as the specialties of the actors involved.*
- 3. Develop simple tools, easy to communicate and avoid redundancies and duplicities with other financial instruments already existing in the various administrative levels*

With respect to the implementation of the option "c", if the chosen option is to entrust it to another entity or institution, the following aspects related to the entity should be specially evaluated in order to achieve the greatest effectiveness in the instruments:

- Previous experiences of the entity with similar instruments, having a team designated for this purpose.
- Financial structure and financial capacity.
- Solvency and credibility of the methodology to be used to select financial intermediaries or final recipients, according to the case.
- Terms and conditions that apply to the final recipients, including prices.
- Fund raising capacity (attracting new funds from third parties).
- Ability to demonstrate that the new instrument would increase its capacity and turnover in the sector of activity of the instrument.
- Proposals for aligning interests and linking results' commitments.



In general, the following factors concerning the implementation and management of the instruments should be considered:

1. Based on the principle of specialization, if the decision is to entrust the implementation to another entity or institution, the a priori preferential option should be the one in which the final decision on the recipients of funding rests in the financial institution specializing in each of the financial alternatives. Although this implementation route has a strong rationality foundation, and in principle it should be the alternative where the best execution levels are combined with the lowest loss ratios, other implementation alternatives through agencies, IFI, APP<sup>6</sup> or others should not be discarded, as long as they demonstrate a better adaptation to the profile of the instrument and scope of expected results, and this will depend on each region (in general Managing Authority). From this point of view:

- When the financial alternative chosen is debt, the financial intermediary should be a Credit Institution, an entity with the structure, experience and knowledge adapted to the processes of granting credit.
- When it comes to Equity, the institution should be a Sociedad Gestora de Entidades de Inversión de Tipo Cerrado (SGEIC)<sup>7</sup>, which is the Spanish institution regulated, registered and supervised by the CNMV (Comisión Nacional del Mercado de Valores) for this purpose.
- In the case of guarantees, the financial intermediary should be a Mutual Guarantee Society.

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<sup>6</sup> Public Promotion Agencies

<sup>7</sup> Traditionally known as Venture Capital Fund Management Company.

2. The figure of the Fund of Funds is an institution that responds very well to the criteria of efficiency and distribution of funds among several financial intermediaries in competing sectors. It is a fund that does not aim to grant financing to final recipients, but to invest in various funds, and these funds decide concerning their protocols, processes and criteria about the investment (financing) and the final recipient. In this way, several institutions can take advantage of the potential of public funds, provided that they demonstrate experience in managing them in the profile of the financial instrument, capacity to raise other funds, preferably private, and to bring the instrument to success by reaching the expected levels of results with the lowest level of incidence.

### **3.3.2 Financing alternatives and risk sharing models**

The design of the financial instrument requires public and private financing alternatives, integrated in a structure of legal and financial content, as well as financial mechanisms. In general we make the following assessments, not in order of importance:

1. It is a priority to mobilize private resources, and to involve the financial mechanism and alternative that facilitates it with the due restrictions fixed in the legislation, guaranteeing the due alignment of interests of the private intermediary with the objectives of the instrument.
2. In cases where the appropriate alternative is debt, a guarantee mechanism may be sufficient to facilitate access to private debt, primarily bank debt. The guarantee implies taking a risk without mobilizing resources, so that, if the dilemma of bank debt is not one of liquidity, a simple guarantee mechanism may be sufficient.
3. Equity is essential for many projects, especially those that require special flexibility in the early years and those that include technical complexities not understood by banks. In these cases the Equity is always a "safety mattress" that also helps to know, treat and cover the risks. Since the capital markets do not yet consider projects for the energy renovation of buildings, the figure of the public investor in equity funds or equity

funds is always an option. In certain cases it may be useful to consider the mechanism of preferential exit from private capital when the instrument justifies it.

4. The alternative of financing through quasi-equity (subordinated debt) is a very interesting alternative to explore, especially when there is an alternative private capital and it is a question of giving greater comfort to the debt.

5. The alignment of interests by private financial intermediaries needs to be taken care of. Where public support is not required, and where funding flows are strictly limited, it is advisable to finance on *pari passu* (equal terms) terms between public and private funding. However, in cases where public aid is required, it is essential to ensure the alignment with some mechanism that will depend on the case. All agents must be aligned in the good outcome of the instrument. For example, if the risks are not adequately balanced, and the decision-maker does not take them, but wins with them/that, the approval decision is likely to be especially lax.

6. Asymmetric profit sharing or first loss piece mechanisms are very interesting for instrument profiles in which a co-investment of private and public flows is desired, but it is necessary to incentivize the private sector due to some market failure, and in view of the existence of a situation of worse results than expected<sup>8</sup>. They are particularly interesting in projects with negative externalities (private decisions with public implications), as in the case of energy renovation, which, being viable, encounter restrictions for private financing or for the final recipient of the measures.

### **3.4 Market failures and sub-optimal situations**

The EE & ER present both market failures and sub-optimal investment situations. The role of the FIs in which the IEE funds are involved is to attract private capital to EE & ER projects

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<sup>8</sup> The cash flows of a project are not certain in all cases, their estimation often responds to a risk context, and estimates are presented subject to this risk context. In risk cases, flow scenarios or worse-than-estimated results may occur. This scenario is called "Down Side", and may require a public mechanism if it is of such magnitude that it is not attractive to private capital.

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of those that do not invest on a regular basis precisely because of market failures or sub-optimal situations. That's why it's interesting to know and specify those that already exist in each of the project profiles in order to make a proposal for FI aligned with its effective solution.

The concept of market failure refers to aspects of the market that do not function properly, resulting in an inefficient allocation of resources.

On the other hand, sub-optimal investment situations lead to underperformance of investment activities. In both cases it may be necessary to assume the need for a public support scheme to overcome the restrictions. The following table shows the market failures in energy renovation.

Causes of Market Failure	Definitions	Energy renovation of buildings
<b>Positive or negative externalities</b>	These are the result of individual or corporate decisions or activities experienced by third parties. This implies that the individual or firm is not able to collect all the benefits or does not pay all the costs resulting from their decision or activity.	<b>Negative externalities:</b> Sometimes, for certain measures, savings allow investments to be recovered over an excessive time horizon for private criteria based on purely economic reasons. On the other hand, the social costs of not implementing these measures are not directly perceived by individuals. <b>Positive externalities:</b> The social benefit is enormous, and it depends on individual decisions that are not implemented.
<b>Public goods</b>	These goods are governed by the principles of non-exclusion and non-rivalry in consumption. This usually gives rise to the "stowaway problem": even if a person does not contribute to the production of a public good, the cost of preventing that person from benefiting from these goods is very high. Goods for which there are no <i>missing markets</i> may present the same problem.	The "tragedy of the commons" is the exhaustion of a resource shared by several agents who are acting rationally at the individual level, despite understanding that the collective long-term interest cannot be achieved by such course of action. It is essential to understand the lack of harmony in individual and global action to combat climate change.

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<b>Incentives found</b>	This occurs when two parties who want to close a contract or agreement have different objectives and incentives and this affects their ability to take decisions.	The incentives encountered and principal-agent problems are relevant to investments in EE and RE in existing buildings, including housing. These problems occur especially with rented buildings, because landlords have little incentive to undertake EE reforms because they do not directly benefit from reduced energy costs. These problems do not occur in owner-occupied buildings. However, the incentives found are also observed in the service sector (especially in rented buildings) and even in the industrial sector (when the development of industrial installations is carried out by contractors trying to minimize costs).
<b>Small projects and high transaction costs</b>	When this happens it can be difficult to structure a financial solution.	One of the main aspects to be considered by funds seeking to invest in EE & ER is that projects are usually small in size and the transaction costs to carry them out are relatively high. This market failure can be overcome by standardization or by grouping projects with different risk profiles and sizes to create a financially attractive proposition. Technical assistance will also be required for the recruitment of Funds.

<b>A lack of capacity or experience in the supply chain</b>	One of the major market failures facing the implementation of EE and the deployment of RE in Europe is the lack of capacity or experience on the supply side.	Energy Service Companies (ESCOs) are very important in the market for the implementation of EE & ER projects, especially those carried out in buildings. Energy Service Contracts help overcome the initial financial constraints of EE investments through a contract between the project developer and the ESCO to install the EE measures, in which costs (including financial costs) are paid on the basis of an agreed level of savings in energy consumption. ESEs offer a wide range of services to end users, from energy service contracts, to energy sales and equipment sales financing. Until now, the concept of shared savings (or energy supply contracts) has been used mainly in Europe and rarely guaranteeing savings. In short, the ESCOs, as a specialist in Energy sector, provide security and confidence in the implementation of projects.
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Type of market failure	Energy Efficiency	Renewable energies
Negative externalities		
Main-agent problems		
Imperfect information		
Small projects size and high transaction costs		
Shortage of ready-made investment projects		

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Lack of access to appropriate funding/high risks		
Lack of capacity or experience in the supply chain		

Meaning			
	High probability	Medium Probability	Low Probability

Some of the most common causes of the sub-optimal investment situation of EE projects in buildings are:

- **Unfunded returns and high risk perception:** Projects that support a low-carbon economy can often have dubious returns for project funders and promoters. In particular, EE projects do not have conventional cash flows, as they are generated through energy savings rather than revenues. Besides, they're not a traditional kind of asset. These factors make financiers unwilling to provide financing unless the project promoter is large enough and willing to accept debt with recourse to finance its energy efficiency projects. This is often not accepted due to alternative priorities within organizations.
- **Long Payback terms:** energy efficiency projects in buildings can lead to long payback terms (more than 10 years), especially those projects that concentrate on the adaptation of the entire building, and therefore have the lowest rates of economic return (project IRR). For projects involving the modernization of the building structure, as well as windows and HVAC (Heating, Ventilation and Air Conditioning) controls, payback times are normally long and, although the internal rate of return (IRR) may be positive in the long term, private investors are not attracted by these measures because IRR is lower than alternative options available on the market.

### **3.5 Identification of possible state aid implications**

European funds under shared management are considered part of national or regional budgets and, as such, are subject to obtaining compliance with state aid rules and potentially subject to prior notification to the European Commission's DG Competition before its implementation. It is a different situation from centrally managed EU funding agencies or institutions, which are not under the direct or indirect control of Member States, and therefore do not constitute state aid.

As the complete design of FIs has to respect the legal basis of state aid rules, early consideration of these rules is always recommended, from the initial design initiation phase. This is important because the compatibility of state aid is relevant to the design of many IF parameters, in particular with regard to eligible investments, maximum amounts per beneficiary, financial conditions attached to them and the governance structure.

The simple use of public funds for financing does not necessarily imply the involvement of public aid. For example, if these public funds are used under market conditions or comply with the Minimis<sup>9</sup> regulation, for which no notification to the Commission would be required. There are many EE & ER projects that are attractive to private capital, and do not require state aid. In this sense, state aid should only be used when market failures or suboptimal situations (see previous point) are identified, such as the renovation of large-scale or other small-scale buildings based on immature technologies or addressing customers who are not particularly solvent or in a situation of energy poverty. The Minimis conditions ensure that, for small-scale projects aimed at private homeowners, the conditions for state aid are met, as it is unlikely to exceed 200,000 euros in three

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<sup>9</sup> In general rules, aid for the same holder does not exceed €200,000 over a period of three fiscal years. In the case of loans, the de minimis guarantee conditions cover only new loans, and the guaranteed part (maximum 80%) of the underlying loan will not exceed €1.5 Million on conditions that do not cause the equivalent state aid to exceed €200,000 (during any period of three fiscal years).

years. A different issue may be the non-residential buildings, whether publicly or privately owned.

The ex ante evaluation should leave evidence that the planned FI:

- Conforms to market conditions.
- Is covered by the Minimis regulation, which means that it is assumed that it will not affect competition and trade between Member States.
- Is governed by a block exemption Regulation (General Block Exemption Regulation, SG Exemption Regulation), which defines the categories of State aid that are presumed to be compatible and are therefore exempted from the notification requirement.
- Is exempted from notification procedures if the intended FI is established as an "Off-the-Shelf"<sup>10</sup> instrument, as the design of such instruments ensures that it's not necessary to notify them to the Commission.
- State aid amounts are not exempted from a block exemption Regulation and therefore require prior notification and approval by the Commission before implementation to confirm the compatibility of the aid with the internal market.

The new "Guidelines on State aid for environmental protection and energy 2014-2020"<sup>12</sup> set out the conditions under which aid for energy and environmental projects can be considered compatible with the internal market. These guidelines are not directly applicable by Member States, but require the elaboration, notification and approval by the EU of an aid scheme, which would be an alternative option to the General Block Exemption Regulation (GBER) which exempts certain categories from prior scrutiny by the Commission<sup>11</sup>. FIs providing investment assistance for EE & ER may fall under Section 7 of the General Block Exemption Regulation (Articles 37-42). The design of the

<sup>10</sup> Among the new opportunities to facilitate IEE Fund funding to final recipients are the so-called "Off the Shelf" instruments, which provide standard terms and conditions and are therefore compatible with IEE Fund regulation and State Aid rules.

<sup>11</sup> [http://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:52014XC0628\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:52014XC0628(01)&from=EN)



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instruments should review these articles to assess the requirements and eligible aid intensity levels for projects and programs. Depending on the objective of the measure and the market failure to which the aid is directed, other rules may apply, such as regional aid rules, which form a section of the GBER.

There is no problem for IFs to coexist with non-refundable incentives, as established by article 37 of the Common Provisions Regulation (CPR). For certain energy renovation measures it may necessary to combine public aid through non-refundable incentives, especially those measures with a particularly long Payback that make it unviable for private capital, but profitable from a social point of view. Also the mentioned article 37 of the CPR establishes that the financial support of the Instrument and the incentives can be developed through different channels, not integrated in the Financial Instrument itself and even implemented by different organizations.

### **3.6 Financing alternatives and risk sharing models. The importance of co-investment with other private and public resources**

One of the objectives pursued with FIs is to try to make private investment and other public funds attractive for co-investment, especially through risk-taking and preferential remuneration mechanisms. To this end, it is necessary to rely on the characteristics and functions of equity, quasi-equity and debt financing, and thus achieve the greatest potential effect by achieving a multiplier effect of public funds in attracting private funds.

*Remember:*

*Equity is more expensive than subordinated debt, and subordinated debt is more expensive than senior debt. However, equity, unlike debt, does not usually have unconditional remuneration and repayment established in the contract.*

*Equity is more flexible than debt. Debt involves contractual payment obligations.*

*In case of difficulties, the equity is the first to lose, and the senior debt the last (in the financial structure). Thus, equity and subordinated debt are buffers for debt.*

*Equity assumes all risks and defines management parameters.*

*As a result of the above, the equity must provide comfort to the debt. In this sense, we can say that equity attracts debt if it is sufficient (in quantity) to absorb the foreseeable losses, and is qualified to successfully face the project.*

These characteristics and relationships between the financing alternatives are those to be considered in any FI structure, and those that must be taken into account to position public funds and achieve the attractiveness for private investment. In this sense, article 37 of the CPR specifies that the ex ante study should include:

- An estimate of additional potentially attainable public and private resources.
- An assessment of the need for preferential remuneration to attract other investors, and the level of such remuneration.
- A description of the mechanisms that will be used to establish the need for and scope of preferential remuneration. It is a question of knowing the methodology to calibrate the attractiveness for potential investors.

### **3.6.1 The measurement of additional funds: The leverage effect**

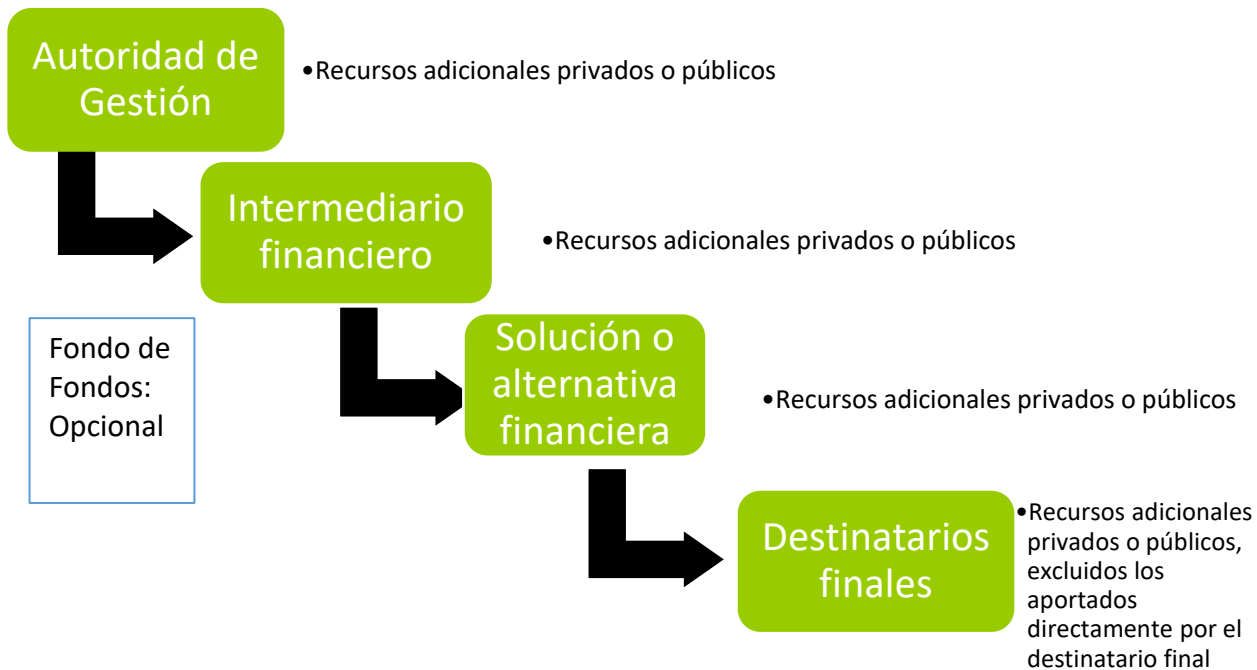
The combination of IEE funds may make sense with the intention of maximizing their synergy effects, but they are not considered additional funds. On the contrary, **additional funds are considered to be those derived from a national or regional budget, and of course, those of private origin.** The contribution of the final recipient (customer) is not considered as an additional resource. According to Article 223 of the Implementing Rules of the Financial Regulation, "leverage"<sup>12</sup> is equal to "the amount of funding for eligible final recipients divided by the amount of the Union contribution". Therefore, it is a question of measuring the obtaining of resources "for" the final recipient, and it is obvious that without counting on its potential contribution in the concept of "additional resources".

In relation to implementation, since an FI can be developed with different structures, additional funding for the purpose of calculating the multiplier or leverage can be considered at all levels, including that of the ultimate recipient<sup>15</sup>. That is to say, all additional funds contributed from a first level of structure (it could be a fund of funds), up to the own level of the final recipient (direct financing from an investor to the final recipient, financing without integrating in structure or vehicle), are considered for the purpose of determining the final computation.

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<sup>12</sup>In this case the leverage expresses additional resources to those invested by the IEE funds program, whether from debt sources or otherwise.

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In general terms, the greater the leverage, the greater the impact of the FI. However, maximizing leverage is not the main objective of IEE Funds, and even maximum leverage does not always ensure the greatest impact on the investment objective of the FI:

- Leverage may be lower in less developed regions than in more developed ones.
- Lower leverage is expected in times of crisis compared to times of boom.
- Further leverage may prejudice the financing terms offered to the final recipient or the revolving<sup>13</sup> effect of the FI if this is the case.

There is no data considered optimal for leverage, it depends on several factors, but ranges from 4 to 5 are the historical averages in soft loan financing. A figure of 4 means that the additional funds are 4 times those contributed by the IEE funds, or in other

<sup>13</sup> Explained in the following section

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words the IEE funds are 20% of the total funds (excluding those contributed by the final recipient).

### **3.6.2 Private investment**

In many cases, especially when a massive impact is desired, it is essential to turn to private investment and even to access capital markets. The scope of public funds is limited and among its objectives must be to make EE & ER an attractive market for private capital. In order to achieve this attractiveness, it may be necessary to establish preferential remuneration or asymmetric risk-taking schemes in a justified manner.

However, high rates of leverage with private resources can also have drawbacks, as is the case with revolving<sup>14</sup>. In these cases, the private resources will not be considered revolving as they will necessarily have to be returned to the investors, and therefore the reinvestment possibilities are limited exclusively to the reduced percentage of public funds (perhaps not all).

In order to effectively attract and monitor additional private resources, the following elements must be defined:

- Expected leverage level and selected private investors.
- ▢ Financial mechanisms to attract private investors, and, if justified, preferential remuneration for them, including potential incentives.
- Mechanisms to align private interests with the objectives of the FI. This is very important. The interests of all actors involved must be adequately aligned with the objectives of the instrument. In this sense, the risks must also be adequately balanced so that the private sector does not perceive that its decisions involve risks that are assumed especially by third parties (moral hazard).

Alignment of interests can be achieved in two ways. Firstly, the *Pari Passu* approach,

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<sup>14</sup> The consideration of revolving implies the possibility of reinvesting the resources that return to the FI as a consequence of the periodic payments derived from the final recipients of the financing.

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which means that a private investor is in the same risk position as the EU contribution. In this case alignment is ensured if private participation is significant. Second, if a preferential remuneration mechanism exists, it should be accompanied by measures aimed at the alignment of interests, e.g. remuneration based on management performance, commercial orientation of management decisions and, where appropriate, direct investment with managers' own resources in the FI. The alignment of interests is part of the assessment of the remuneration of the private co-investor.

### **3.6.3 Asymmetry between private and public funds: Preferential remuneration for private investors and differentiated risk**

The standard approach is *pari passu* remuneration, where public and private investors share exactly the same risks and rewards, due to state aid considerations. However, this preferential remuneration is possible, but needs to be specifically justified and evaluated as part of the *ex ante* evaluation.

The scope of preferential remuneration was already used in the 2007-2013 framework, although it was limited to returns. In the period 2014-2020, the preferential remuneration is also extended to the capital repaid. The managing authorities could therefore consider:

- Asymmetric profit-sharing
- Asymmetric loss distribution (e.g. guarantee schemes, covering a first loss of downward risk on innovation loans)
- Payment of preferential fees to managers as far as they are also co-investors
- Preferential exit regime (e.g. risk-taking in contracts not sold in energy efficiency funds)

In line with this increased consideration of preferential remuneration schemes at EU level, the scope of the envisaged General Block Exemption Regulation is broader than in the past<sup>15</sup>. However, the following limitations are established:

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<sup>15</sup> In the regulation, with regard to energy, it is only regulated to energy efficiency in buildings, and not to renewable energies, according to article 39

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- In asymmetrical loss exchange, a public investor's first loss is capped at 20% of his total investment or 20% of a guaranteed portfolio.
- The asymmetric distribution of results should be considered preferably in previously defined down-side scenarios, i.e. where the results initially expected by the FI are not achieved.
- Intermediaries should be selected through an open, transparent and non-discriminatory call.

There are various alternatives for assessing **the need and extent of preferential remuneration** needed to attract private investors.

The first is to analyze the experience in the sector so far. It is very likely that there will be no experience with IEE funds involving private investors.

In such cases, it is recommended to also consider previous experiences beyond IEE funds.

The second approach is to conduct a comprehensive study that:

- Define the main investment criteria for potential private investors, particularly in terms of expected returns and risk motivation.
- Establish a hierarchy of preferential schemes according to their impact on competition. For example, asymmetric profit-sharing schemes tend to be less distortive than asymmetric loss distribution schemes. It is not the same asymmetry when "winning" than "losing".
- Provide for a preferential remuneration scheme as part of the IF governance, mitigating the risks of a down-side for the financing of IEE funds. The aim is to encourage good management, and therefore the results of the FI and the impact of the IEE funds.

The main indicators for assessing the need for preferential remuneration are related to risk: in particular, to the risk motivation of private partners or to the existence of a new financial product, where experience and track record are not sufficient or clearly insufficient. The analysis of the need to establish this preferential remuneration, therefore, includes:

- The target sector itself, as different sectors show different risk profiles.
- Diversification of the fund by sector and region.
- ❓ The degree of diversification of the portfolio. Risk is diluted with diversification. The risk tends to be greater if a loan portfolio consists of a small number of large loans rather than a large number of small loans. However, it should be noted that for most thematic objectives or investment priorities, with the exception of SME competitiveness and energy renovation of housing, good portfolio diversification may be difficult to achieve.
- Position in the life cycle of products or companies. Newly created companies or projects in the development phase may present more risks than those that already have a reality of development and proven cash generation.
- Maturity of the target market in terms of IF implementation, as financial partners tend to be more reluctant and ask for preferential remuneration in regions or sectors where previous experience with FIs is limited.

Once the risk scenario has been evaluated, it is necessary to analyze the return expectations for private investors, and the potential balance with the risks assumed. The preferential remuneration implies a possible mismatch between the risks taken by private investors and the expected results in the FI. In theory, the greater the risk, the greater the expectation of return, and not the other way around. The steps to follow for the evaluation of this potential imbalance are:

- Expectation of expected return (IRR) and IF risk.
- Expectations of return of private partners, taking into account the volume of



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their contribution and the distribution of profit and risk.

Based on these considerations, it is possible to estimate the amount of support needed to attract private investors. Two components could be identified:

- The difference between the expected IRR of the IF and the fair rate of return (FRR) of private investors<sup>16</sup>
- The IRR required to compensate special risk situations

However, asymmetries between public and private investors cannot always be based on a preferential remuneration scheme, i.e. asymmetries in the distribution of results. If the intended sector is considered by banks or other financial institutions to be too risky, compensation through asymmetric distribution of results (or returns) will not be possible or will be too costly. The perceived risk may be temporary (situations of economic crisis or new product with no history), but it may also be systemic (sector risk) or portfolio-related (few high value projects). In such cases, a risk reduction (asymmetric loss protection) for private investors should be assessed. The cutting-edge instruments for risk reduction are the so-called first-loss buffers, which imply that, up to a predefined limit, losses are borne by IEE funds. If the actual losses are below this threshold, they are covered by the public budget. Above this threshold, losses are shared *pari passu* between the private and the public, or according to another previously agreed rule. The *ex ante* evaluation will give a reasonable range for these values. As already mentioned, an initial limit of 20% is foreseen for the first loss mechanism in the GBER for SME risk instruments; however, for example, the UK authorities report the need to consider up to 50% initial loss for their regional risk capital markets, which are among the most developed in Europe.

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<sup>16</sup> FRR is understood as a risk-adjusted rate of return that is comparable to other alternatives in the market segment in which it operates. When market data is not available or the market is very limited, the FRR could be determined by an independent expert by analyzing comparables data and market risk.

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## Financial instruments based on structural funds aimed at energy renovation of buildings

### Unit 3. Types of contracts for improving energy efficiency and its responsibilities



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### Unit 3. Types of contracts for improving energy efficiency and responsibilities

- 1 Energy Performance Contract (EPC)
- 2 Operational and financial leasing contracts
- 3 Contracts for the sale of energy

We have mentioned that barriers to building renovation are important, and that off-balance sheet financing would facilitate a comfort scenario for end users as it does not involve financial limitation or restriction. The conditions laid down in contracts and the balance of risks between the parties established in them are important in order to be able to consider financing as "off-balance-sheet". If it is an off-balance sheet instrument of the client, it cannot be based on a debt contract in which recurring payment obligations are established, with personal or corporate guarantee, and in which the technical, demand, market and asset price risks are on the part of the client. That contract would obligate the customer to recognize it in its own balance sheet as debt.

The main contracts adapted to the off-balance sheet financing profile are:

(i) energy performance contracts, in their various forms, (ii) operational leasing contracts, and (iii) energy sales or supply contracts.

In essence, these contracts are developed by Energy Service Companies (ESCOs), which are defined in Royal Decree-Law 6/2010 of 9 April as *"any natural or legal person who can provide energy services, as defined in the following paragraph, in the facilities or premises of a user, and faces some degree of economic risk in doing so. The payment for the services provided is based either in part or in full on the achievement of energy savings through the introduction of energy efficiency improvements and on compliance with the agreed performance requirements"*<sup>1</sup>.

On the other hand, the same Royal Decree Law establishes that *"the energy service provided by the energy services company shall consist of a set of benefits including the carrying out of intangible investments, works or supplies necessary to optimize quality and reduce energy costs.*

*This action may also include the construction, installation or transformation of works, equipment and systems, their maintenance, updating or renewal, their operation or*

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<sup>1</sup> <https://www.boe.es/buscar/doc.php?id=BOE-A-2010-5879>

*Financial instruments based on structural funds oriented to the energetic renovation of buildings management derived from the incorporation of efficient technologies. The energy service defined in this way must be provided on the basis of a contract which must be associated with verifiable, measurable or estimable energy savings".*

## 1. Energy Performance Contracts (EPCs)

An EPC<sup>2</sup> contract is a contractual agreement between the ESCO and the customer for the provision of energy services, taking into account that the return on investment in such measures will be based (in part or in full) on obtaining the savings produced by the level of energy efficiency improvement agreed in the contract. In other words, there is an established performance guarantee.

By means of this contractual modality, the client and the ESCO agree on the technical and economic conditions in which the energy service will be carried out; outsourcing its provision and assuming the ESCO the obligation to provide certain performances. There are different types of performance guarantee and distribution or distribution: economic performance (euros) or energy performance (kW) can be guaranteed. In turn, the savings, from a certain level, can be shared with the client or not.

EPC contracts include technical, financial and legal complexity. Its elaboration and comprehension is not simple. It is always advisable to be well advised and to include in the contract the need for measurement and verification (M&V) of savings by one of the established and internationally accepted protocols, such as the IPMVP<sup>3</sup> or EVO<sup>4</sup>. The measurement and verification of savings makes possible to determine a posteriori the savings produced by the measures and to compare them.

It is a worthwhile additional cost, provides comfort as well as it justifies savings and avoids further dilemmas.

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<sup>2</sup> [http://ec.europa.eu/eurostat/documents/1015035/7959867/Eurostat-Guidance-Note-Recording- Energy-Perform-Contracts-Gov-Accounts.pdf/](http://ec.europa.eu/eurostat/documents/1015035/7959867/Eurostat-Guidance-Note-Recording-Energy-Perform-Contracts-Gov-Accounts.pdf/)

<sup>3</sup> International Performance Measurement and Verification Protocol.

[https://en.wikipedia.org/wiki/International\\_performance\\_measurement\\_and\\_verification\\_protocol](https://en.wikipedia.org/wiki/International_performance_measurement_and_verification_protocol)

<sup>4</sup> <https://evo-world.org/en/>

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Eurostat has recently adopted a "guidance note" to clarify the accounting procedures and consequences for governments of energy performance contracts. This guidance note significantly increases the possibilities for public bodies to use these contracts by including and clarifying the circumstances under which they should be recorded as debt. In this way, this modification is in line with the third pillar of the Juncker Plan, which aims to eliminate regulatory barriers to investment. It also paves the way for the development of a stronger market for Energy Service Companies through EPC contracts, and involving many SMEs in the energy sector and their installer auxiliaries.

The conditions required for EPC contracts with public institutions for the recognition of off-balance sheet financing are perfectly applicable to private ones. In this way, by explaining the public ones, we can transfer the conclusions to the private ones. Recently the European Investment Bank has published a guide on EPC<sup>5</sup> contracts and their treatment in public accounting, which we recommend to read in detail. Basically, in order for an EPC to be recorded off the government balance sheet, the EPC contractor must be considered the owner of the installed assets, which means that it will have to be the entity that incurs most of the risks and benefits from most of the rewards associated with the EPC contract. The consideration of the property is not the only relevant, there are other relevant aspects such as the duration of the contract, if the public institution commits public resources or establishes guarantees to the contractor or other specific clauses that may distort the distribution of risks and rewards in an EPC contract. All these questions must be settled by the National Statistical Institute of each member country, and in case of doubt Eurostat itself may be required for consultation.

Energy performance contracts may have different scope. Following the IDAE<sup>6</sup> model energy services contract proposal for public buildings, the potential features included in the contracts are as follows:

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<sup>5</sup> <http://www.eib.org/infocentre/publications/all/guide-to-statistical-treatment-of-epc.htm>

<sup>6</sup> [http://www.idae.es/uploads/documentos/documentos\\_10704\\_Proposal\\_model\\_contract\\_serv\\_ene\\_rg\\_07\\_59056bbe.pdf](http://www.idae.es/uploads/documentos/documentos_10704_Proposal_model_contract_serv_ene_rg_07_59056bbe.pdf)



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- P1- Energy Management: Energy management necessary for the correct operation of the installations covered by the contract; management of the energy supply of fuels and electricity for the entire building, quality control, quantity and use, and supply guarantees.
- P2- Maintenance: Preventive maintenance to achieve perfect operation and cleanliness of the facilities with all its components, as well as achieving the permanence in time of the performance of the facilities and all its components at initial value.
- P3- Total Warranty: replacement of all deteriorated elements in the installations.
- P4- Works for the Improvement and Renovation of Energy-Consuming Installations: Carrying out and financing works for the improvement and renovation of the installations, which, at the proposal of the owner of the building, are specified in the Technical Specifications.
- ☐ P5-Investments in energy saving and renewable energy: in addition to the benefits listed, this contract is intended to promote the improvement of energy efficiency through the incorporation of equipment and services installations promoting energy saving, energy efficiency and the use of renewable energies, such as biomass, solar thermal, photovoltaic, cogeneration, etc. These facilities must be studied, proposed, executed and financed by the contractor through savings or sale of renewable energy, obtained within the contract term, and will not have an economic impact on the contract budget. Two types of investments will be presented: those unconditionally assumed by the successful bidder, and those whose execution depends on the occurrence of an event exogenous to the contract (obtaining subsidies, licenses, permits, connections and connection rights, etc.). For both types, a Technical Report will be presented, consisting of an energy study, a technical-economic study, an execution plan and possible conditions for its execution.

## **2. Operational and financial leasing contracts**

In essence, the differences between operating leases and finance leases are found in the ownership of the assets and, consequently, in the balance of risks and rewards between the parties. A renting contract implies a clear ownership by the renting entity, with the maintenance and total guarantee of the assets. This property also implies, among other issues, that the price or value risk is also on the part of the renting entity, and this is the reason why a pre-established residual value that is not subject to market laws cannot be included in this contractual modality. These contractual characteristics are those that allow the consideration of off-balance sheet financing, and which does not involve recognized debt for the customer.

Renting contracts are limited to the replacement of equipment, and it is difficult for contracts to reach long periods as they must leave a sufficient queue of useful life to offer attractiveness in the necessary sale that the renting entity will have to make once the contract has expired. However, renting contracts may incorporate additional guaranteed performance terms, just like EPCs, although this is an added difficulty to contracts, since in many cases they do not coincide in the same figure between the renting entity and the energy services company, and the renting entities do not wish to assume functions and responsibilities beyond the renting activity itself. However, it is possible to overcome these limitations by signing differentiated contracts between energy services (including maintenance) with the ESCO and the provision of equipment with the renting entity. The following illustration shows a possible structure based on renting contracts.

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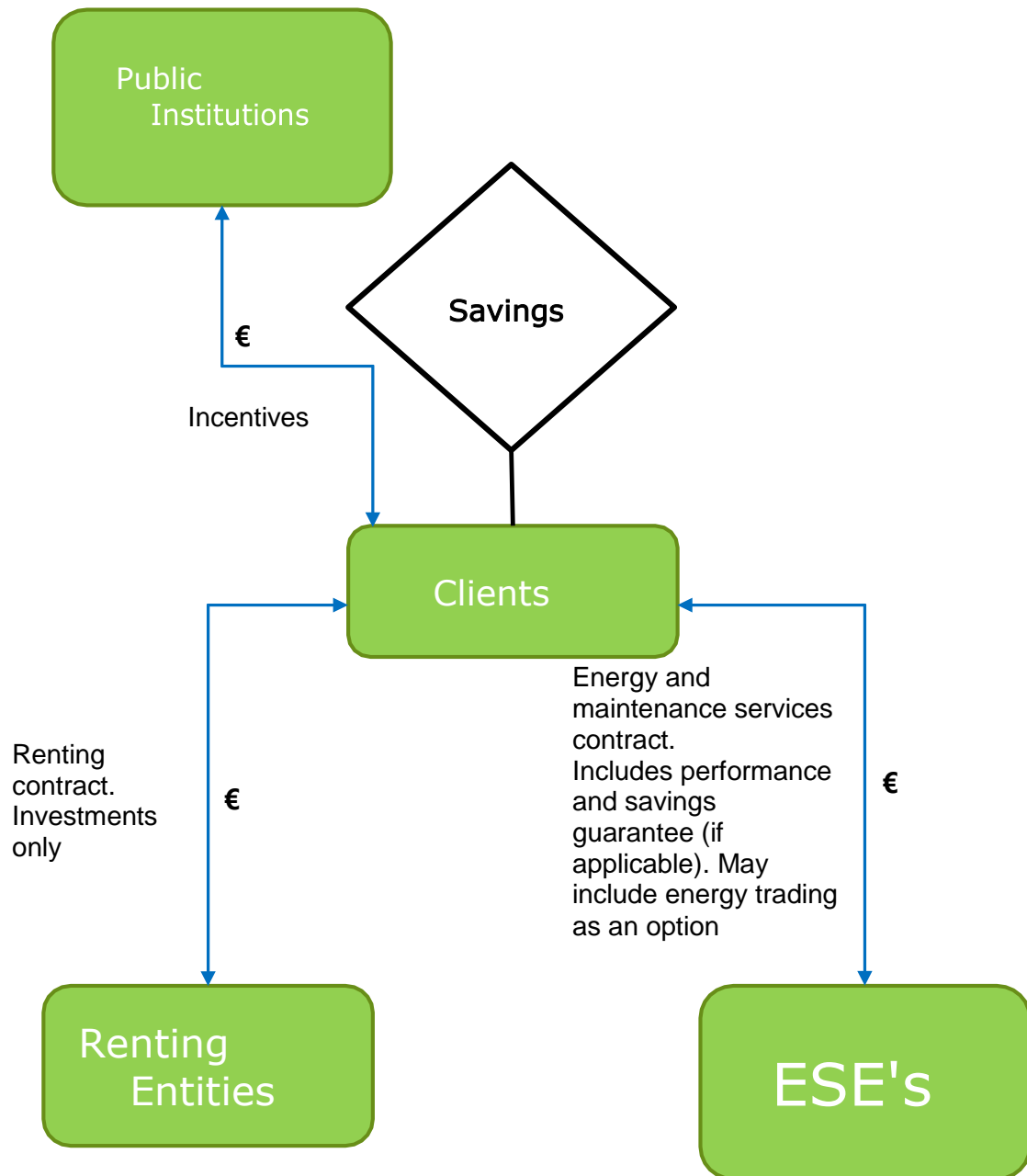


Figure 1. Own elaboration.

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As with EPC contracts, in renting contracts that include energy services, it may also be advisable to include the option of measuring and verifying savings.

### **3. Contracts for the sale of energy**

The Power Purchase Agreement (PPA), which will tend to grow in the coming years, adapts very well to many renewable energy projects, and is valid for any type of final energy demand, although the sale of electricity is regulated and it is necessary to adapt to the regulations.

It is the contract that raises the least doubts with respect to ownership, risk balance and performance guarantee. In this case, all the risks are assumed by the ESCO; the customer simply pays for the energy consumed at agreed prices that may be unrelated to the wholesale prices of that energy and, therefore, not subject to the volatility of market prices. In a renewable installation, the prices offered have to do with the "numbers" of the installation itself and the IRR intended by the ESCO, and not so much with the ups and downs of the electricity market (if this is the case).

PPA contracts offer stable prices over the long term, with the consequent advantage in terms of reduced uncertainty and risks for both parties. This is the reason for its success in the growth of renewable generation plants. In the following illustration, you can see the evolution and profile of the contractors. Among others, it shows how IKEA, Google, Microsoft or Amazon contract their energy through PPA.

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## AGGREGATE OFFSITE RENEWABLE DEALS IN THE C&I SECTOR BY ENERGY TYPE\*

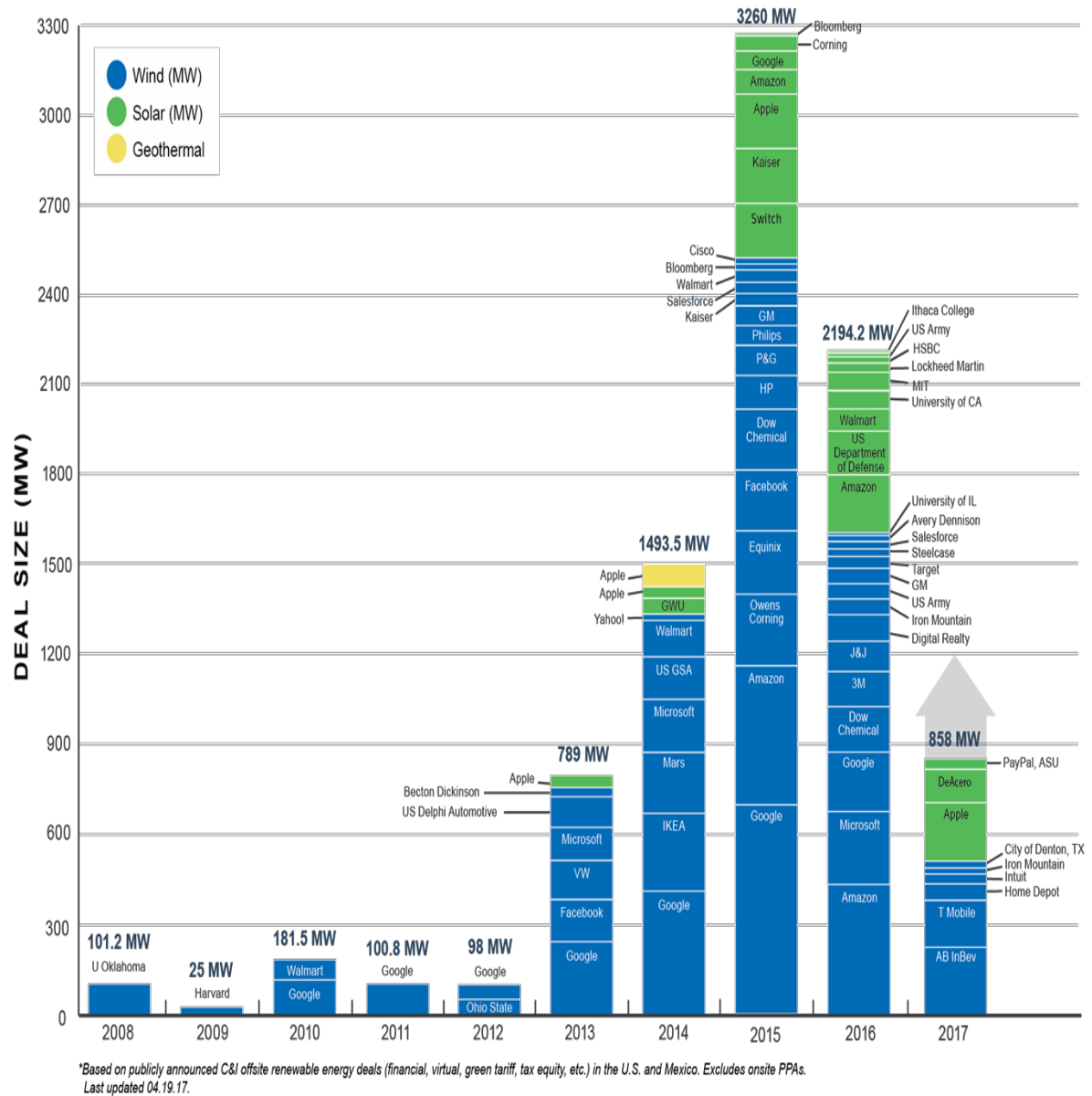


Figure 2. PPA contracts divided by "type of energy". Schneider Electric. "The Economic Case for Renewable Energy: why companies are choosing power purchase agreements". 2017

In summary, there are two types of PPA:

- Physical PPA. The buyer obtains the energy directly from the seller, in addition to the corresponding renewable energy certificates. It adapts very well to companies with a very concentrated electricity consumption in one location. An example could be a photovoltaic plant in the same facilities as a large electricity consumer, but with investment and ownership of the plant by a third party that simply sells the energy produced by the plant.

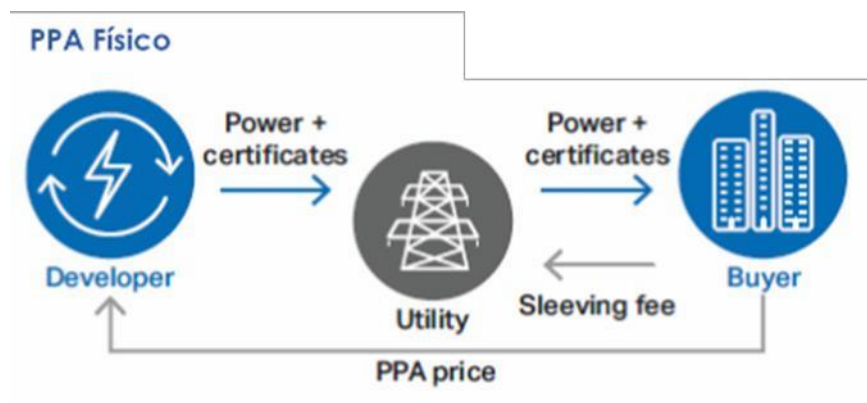


Figure 3. Own elaboration.

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- Financial PPA. The energy generated by the plant is sold to the market in the name of the buyer, at market prices and subject to volatility, but in parallel buyer and seller agree on a long-term closed price, and the consequent issuance of renewable energy certificates. Thus, if the agreed price was 60 €/MWh and the energy was sold to the market for 40 €/MWh, the buyer will have to compensate the seller with the 20 euros difference, or vice versa in the case of sale in the market above the prices of the PPA.

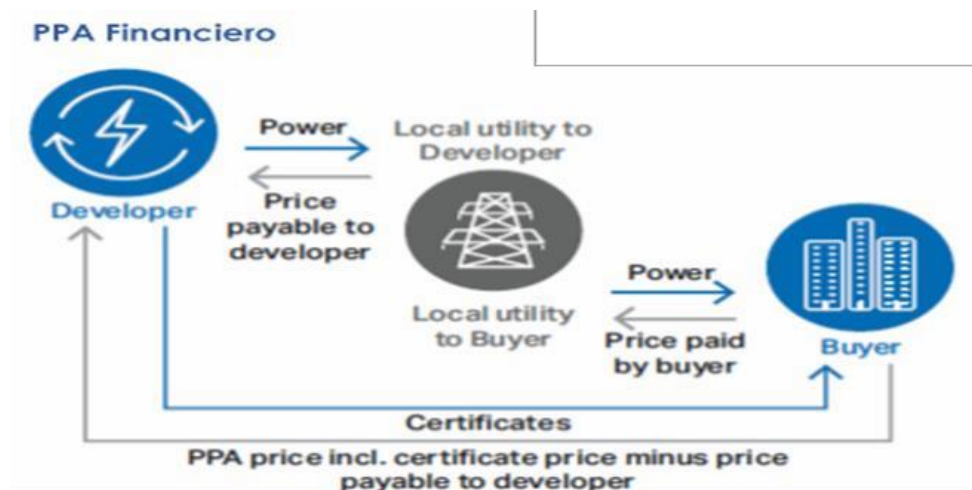


Figure 4. Own elaboration.

This financial version adapts very well to large consumers with a much dispersed geographical location, and is very useful for promoters of photovoltaic plants awarded in renewable auctions as they transform income subject to the market volatility in a stable cash generation that makes projects more attractive for bank financing.

The following illustration shows the differences between them:



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What are you buying?	What are you obtaining?	Adapted to:	Project location
Electricity and renewable production certificates (REC)	Electricity and renewable production certificates (REC)	Companies with oncentrate electricity consumption	Market retailers
Electricity and renewable production certificates (REC)	Renewable production certificates (REC). Electricity is sold "at your name"	Companies with dispersed electricity consumption	Wholesale markets

Figure 5. Own elaboration.

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## Financial instruments based on structural funds aimed at energy renovation of buildings

### Unit 4. Financial instruments for the renovation of buildings. Success stories and international references



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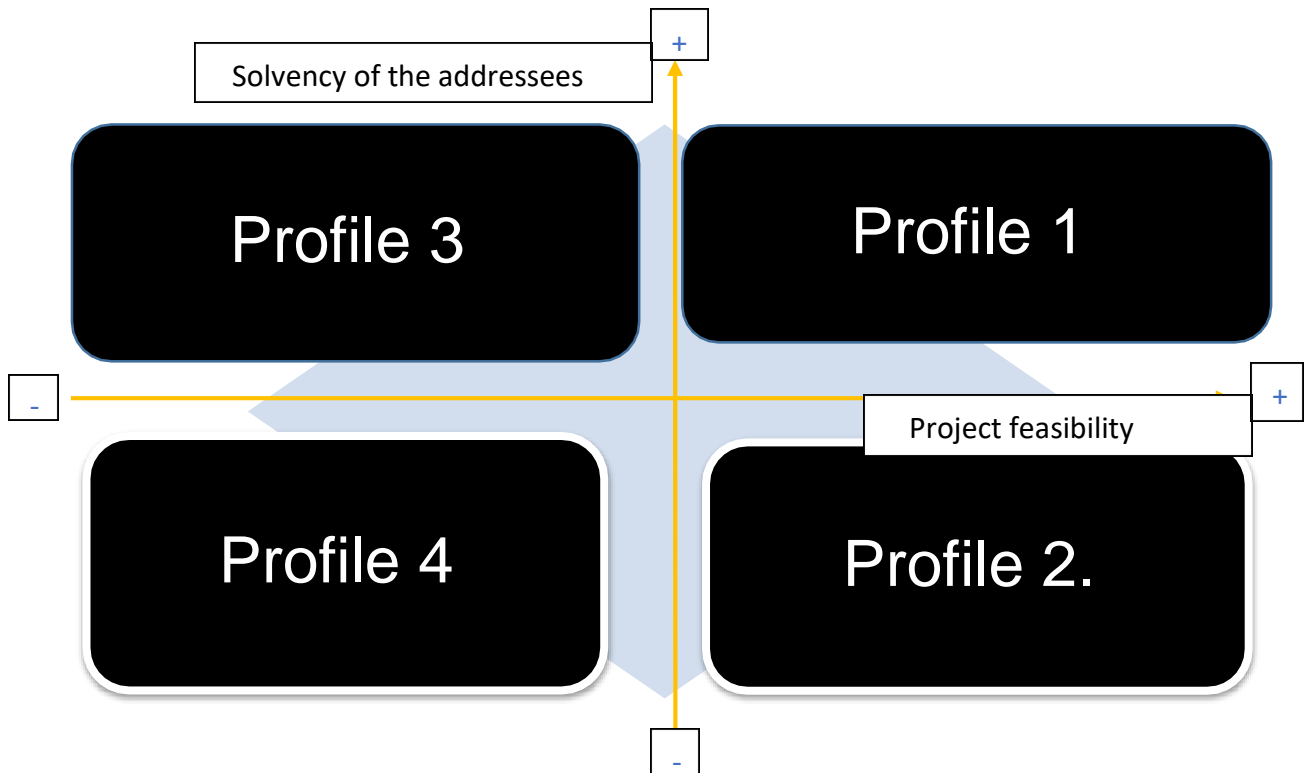
Unit 4. Financial instruments for energy renovation of buildings.  
Success stories and international references

1. Introduction
2. The Nord Pas de Calais Financial Instrument
3. The Green Revolving Fund (GRF)
4. The On Tax Financing and On Bill Financing mechanisms
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6. A PACE programme for Europe: EuroPace

## 1. Introduction

The EE&ER can be classified according to very different criteria, but there is a simple way to establish profiles based on two of the most important parameters for the private investor: the solvency of the final recipient, and the economic and financial viability of the projects. Both parameters will allow us to determine the potential interest for the private investor, and therefore the need (or not) to complement with public funds and the potential asymmetric mechanisms required to attract private capital.

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*Figure 1. Own elaboration.*

A sign is added to each of the profiles, indicating the size of the project (large + and small -).

The clearly attractive profile for investors and private finance is profile 1+, with viable projects and a large volume of investment aimed at solvent clients. This may be the case for the renovation of hospitals, hotels, public and private office buildings, universities, etc. On the other hand, profile 4 projects are initially the least attractive to private investors and financiers. This is clearly the case with the energy renovation of residential buildings in popular neighborhoods, and it is precisely one of the most urgent and socially demanding renovation needs.

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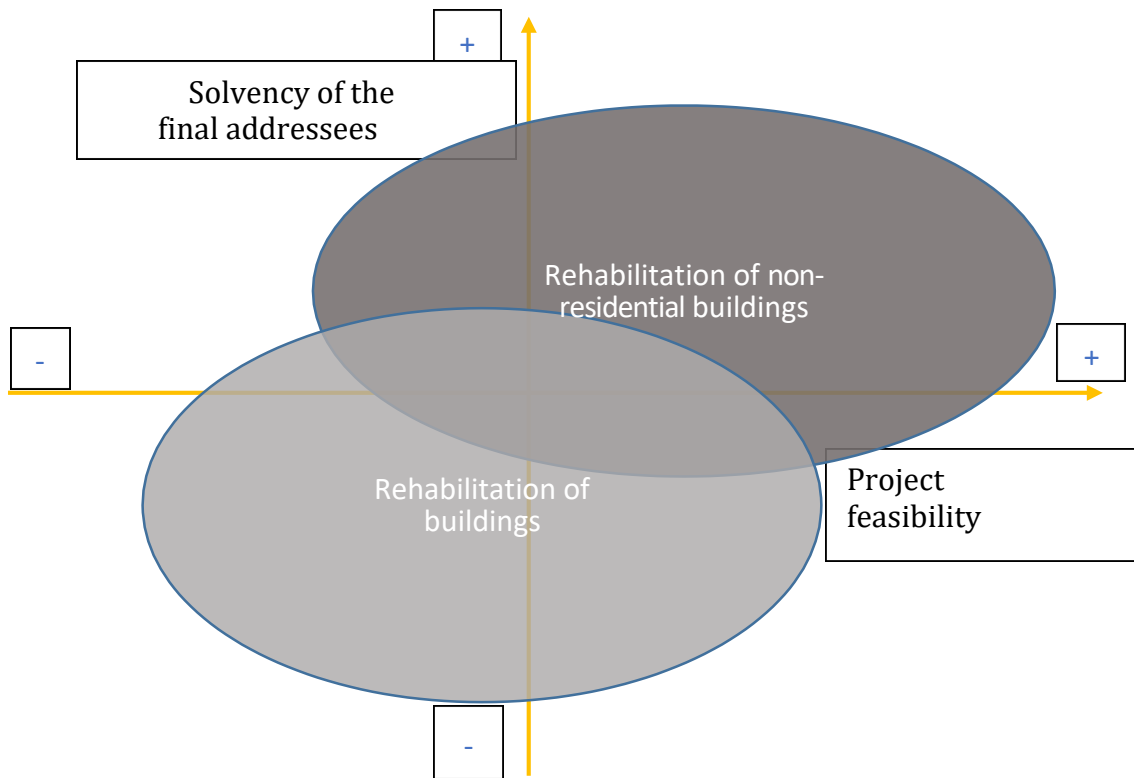


Figure 2. Own elaboration.

Public funding, and the role it is intended to play in the new framework of European funds, must play a more active and dynamic role in attracting private capital as we evolve in the profiles from 1+, with no need for public contribution, to 4+, where public mechanisms must play a very active role.

The following illustration presents three solutions, including the EE&ER profiles to which they are oriented, and some investment objectives to which they could be directed. In the following epigraphs we explain each one of them.

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<b>Perfil 1 y 3</b> <b>Tamaño ±</b>	<b>Perfil 1 y 2</b> <b>Tamaño +</b>	<b>Perfil 1, 2, 3 y 4</b> <b>Tamaño ±</b> <b>Perfil Preferencial 4 -</b>
<b>Instrumento</b> <b>Financiero de Nord</b> <b>pas de Calais</b>	<b>Green Revolving</b> <b>Fund</b>	<b>Euro Pace</b>
<ul style="list-style-type: none"> <li>• Dirigido a compañías o vehículos de inversión</li> <li>• Orientación: EE &amp; ER, economía circular, transporte sostenible y redes inteligentes</li> </ul>	<ul style="list-style-type: none"> <li>• Dirigido a <b>Grandes consumidores:</b> Hospitales, Industria, Universidades, Entidades Públicas y otras instituciones sin animo de lucro</li> <li>• Orientación: Inversión sostenible, incluida rehabilitación</li> </ul>	<ul style="list-style-type: none"> <li>• Dirigido a cualquier propietario de inmueble. <b>Especialmente adaptado al residencial</b></li> <li>• Targets: Rehabilitación energética y accesibilidad</li> </ul>
<b>Instrumento en</b> <b>ejecución en Nord Pas</b> <b>de Calais</b>	<b>Instrumento en</b> <b>ejecución en EEUU</b>	<b>Instrumento en ejecución en</b> <b>EEUU, Canada, Sudafrica y</b> <b>Australia.</b> <b>Actualmente in Europe</b>

Figure 3. Own elaboration.

If synergies between the different solutions are to be maximized and the EIB is to be integrated through the EFSI fund, it is recommended to integrate all solutions into an EIB investment platform for the EFSI fund<sup>1</sup>. In the following sections we will see it in detail.

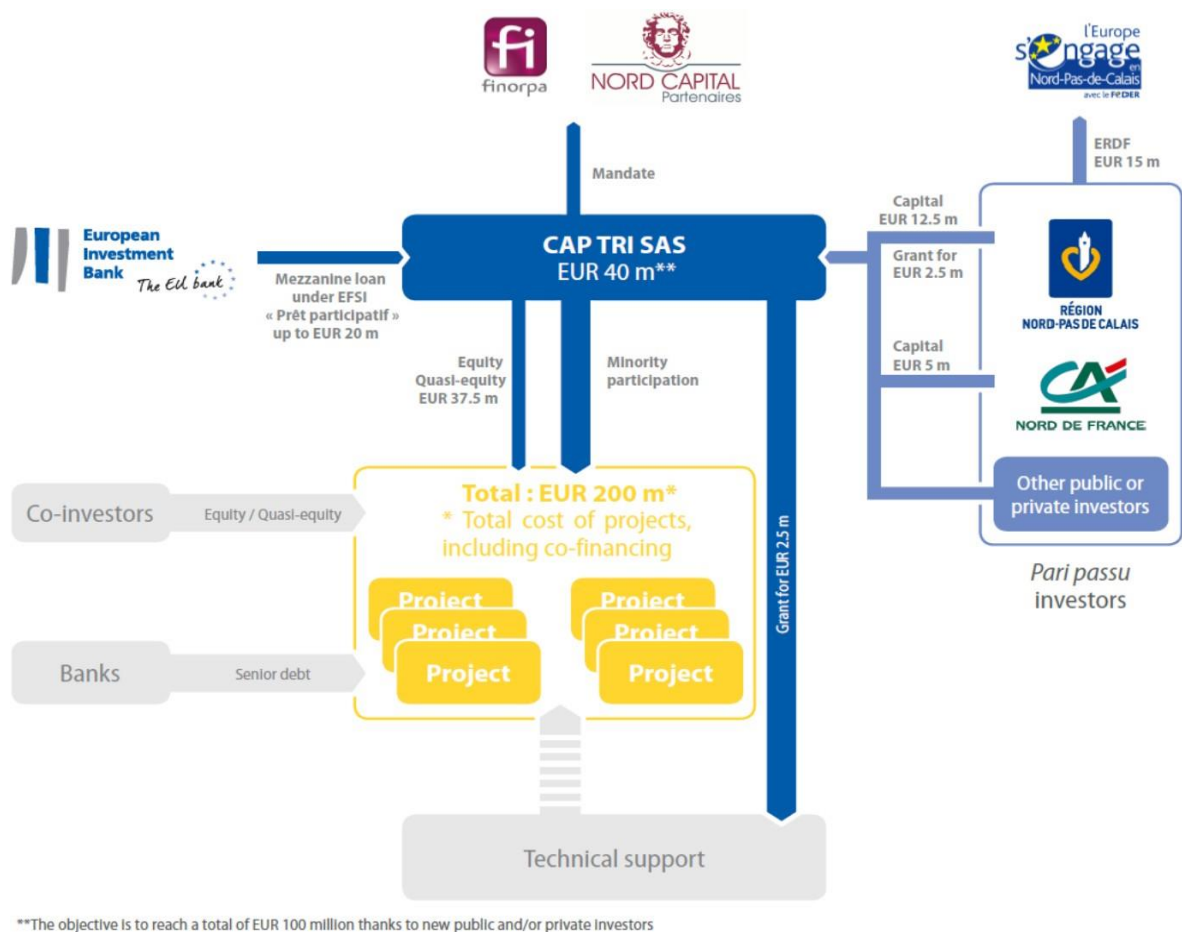
<sup>1</sup> <http://www.eib.org/infocentre/publications/all/efsi-rules-applicable-to-operations.html>



## **2. The financial instrument of Nord Pas de Calais**

This is a privately managed fund developed by a local Management Company which obtained a public tender for this purpose. The investors are the region itself with ERDF funds amounting to € 15 million and the reference investor of the private manager amounting to € 5 million. Of the 15 million provided by ERDF funds, 2.5 million is earmarked for technical assistance projects. On the other hand, the fund obtained a Mezzanine financing (subordinated debt) amounting to 20 million €, with repayment after 15 years (this type is called bullet), with a small periodic remuneration and a successful remuneration established at the end of the exit.

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\*\*The objective is to reach a total of EUR 100 million thanks to new public and/or private investors

Source Nord Pas de Calais Financial Instrument.

In this way, a fund is set up for sustainable investment for a total amount of €40 million, to which must be added direct investment in projects by other investors and financing through additional debt at the level of projects financed. A total final investment of €200 million is estimated. The fund is managed privately, with a good alignment of interests for the investment committed by the manager and with a good additionality of funds (1.6 euros for each euro of ERDF funds in the fund, and 13.3 euros for each euro of ERDF funds at project level). The fund should only deal with projects within the framework of the orientation established in the public call, but, as it responds to private management criteria, it will only be able to carry out projects that respond to private criteria of desired return and risk. This leaves out many of the residential building projects, although it is a

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very valid instrument for promoting all viable projects through the development of investment vehicles that allow off-balance sheet investments, with energy service contracts or sale of useful energy (PPA), and also to facilitate the growth of energy service companies by investing in their capitalization and giving them financial flexibility to grow.

In the following graphic you can see possible investment developments of the fund:

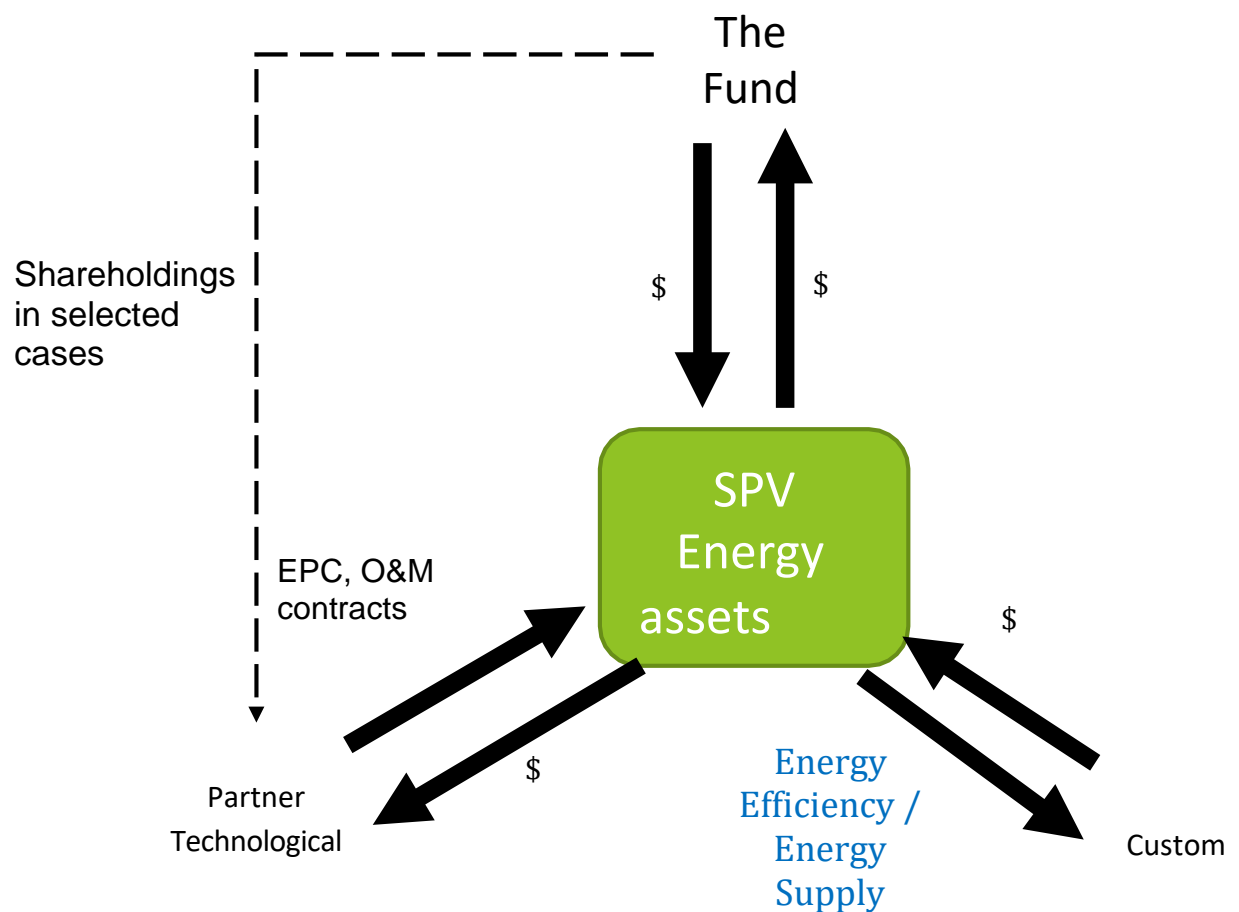


Figure 4. Own elaboration.

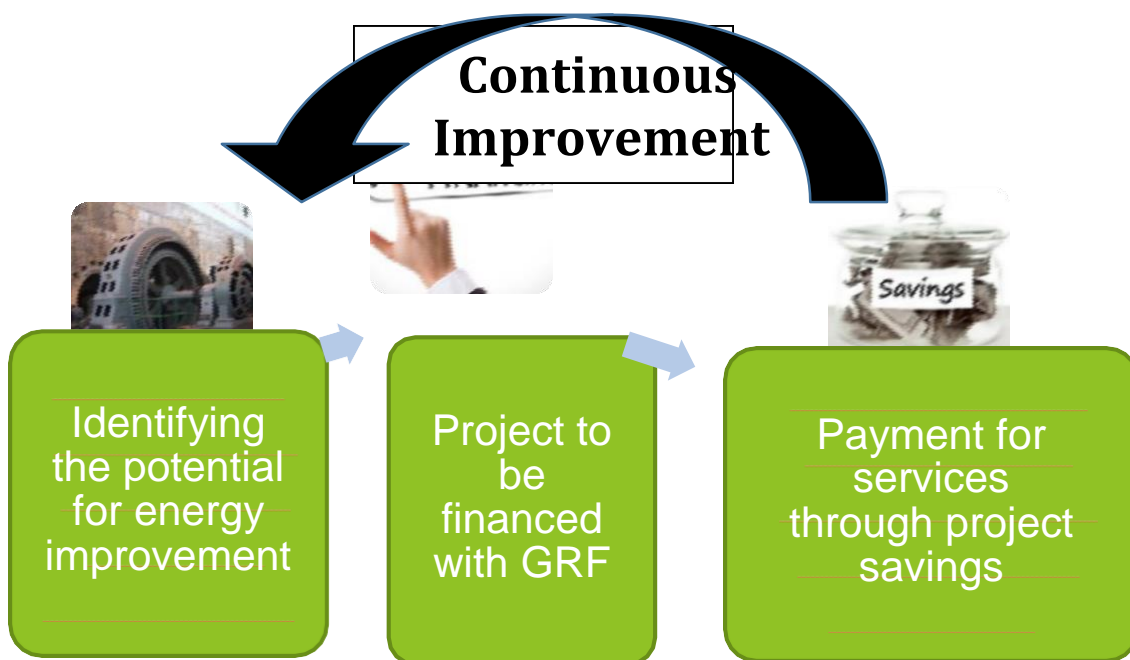
### **3. The Green Revolving Fund (GRF)**

There are two criteria for considering an investment instrument as a Green Revolving Fund:

- The fund should finance measures that reduce the consumption of resources (energy, water, waste, etc.) or mitigate CO2 emissions.
- The fund must reinvest. Therefore, the client must allocate at least part of the savings obtained as a result of the reduction in costs to return and repay the investments made by the fund, and the fund undertakes to reinvest these resources in new projects, which requires that not all investors in the fund can count on a program of return of their capital. These funds not returned to the investors allow reinvestment.

The second point needs clarification. In Funds that invest in energy improvement projects, it is normal for their investment to be repaid from the savings generated for clients; this is neither extraordinary nor what characterizes a revolving fund. The differentiation of revolving funds is that not all investors in the fund are paid back or return their contribution since, instead, that box is used to finance new projects by the fund. Not distributing cash to part of the investors does not mean that the purpose of the fund is to operate at a loss, but to use that cash for new projects. It is a very important difference; it is a question of compromising the savings achieved in new future investments. For this reason, in the financial structure of a revolving fund it is very important to have public and private investors, since the latter require reasonable investment periods and cannot be included into revolving consideration. In other words, the more leverage with private resources, the more difficult the revolving effect.

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*Figure 5. Own elaboration.*

A common case of revolving funds is that they are invested in university facilities and, in general, non-profit and public institutions. It is very common to create a different fund for each institution, which may even have different structuring, implementation and management.

A proposal to implement a potential Green Revolving Fund (GRF) with IEE funds could respond to the following scheme:

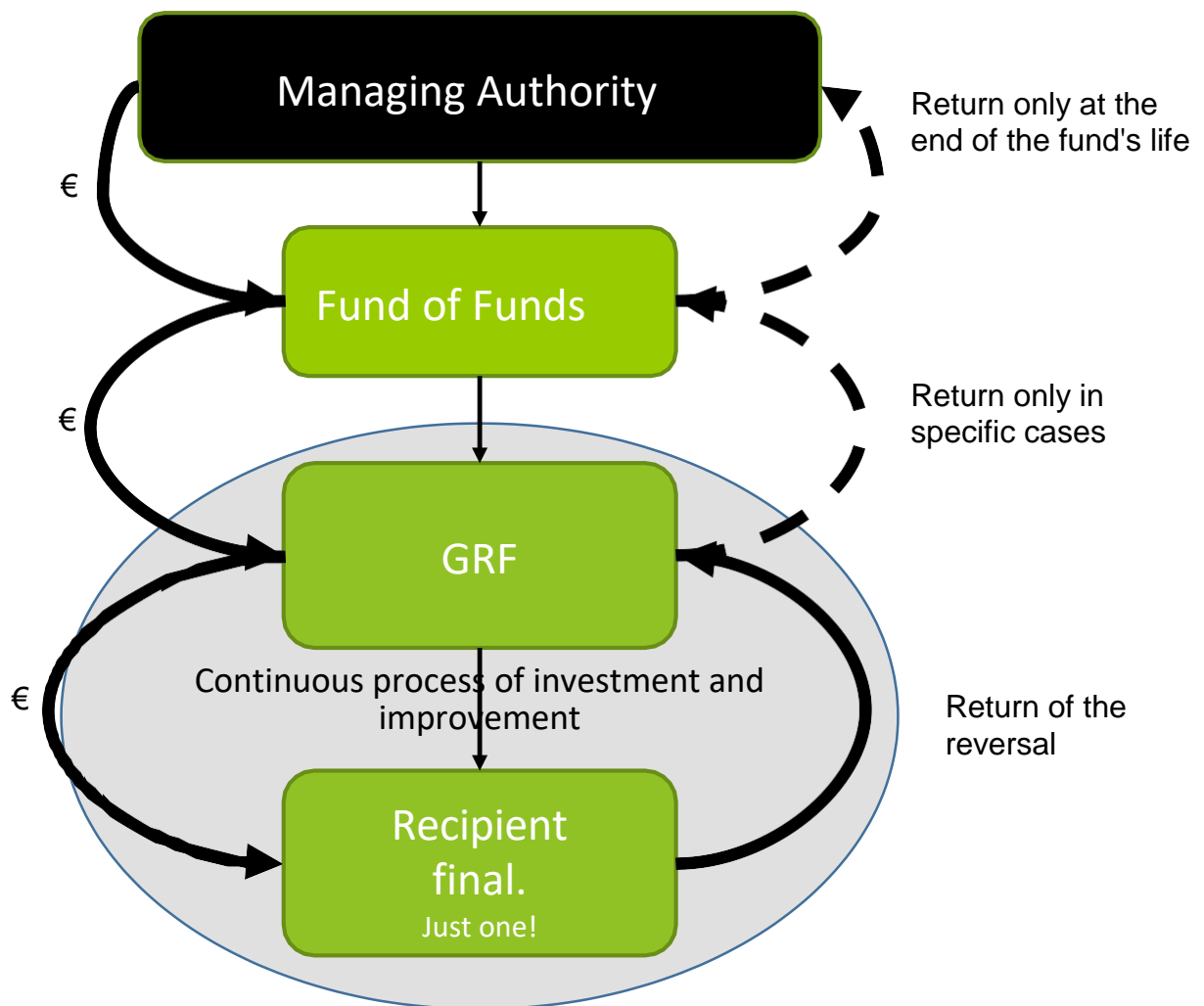


Figure 6. Own elaboration.

It can be observed how, in the implementation proposal, the IEE funds (European

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Structural and Investment Funds) remain in the GRF, giving the fund the possibility of a permanent investment of the returns previously achieved in a permanent reinvestment process: the results achieved with previous sustainable investments make possible to conduct more sustainable investments.

A revolving fund has substantial advantages over a conventional fund, among them we can highlight:

- Demonstration of the success of the sustainable investment program<sup>2</sup>. Savings are transferred to the fund for new investments, with measured return (IRR).
- Involves and educates the entire community integrated in the beneficiary institution of the fund. For example, in a university community you can integrate diverse specialists in investment decision-making (legal, financial, technical, architectural, etc.), all united around a common sustainability strategy.
- Transmits reputational benefits. It is a unified investment vehicle with a specific purpose that generates more positive press than the traditional investments that are integrated into the institution's budget.
- Catalyzes a change in values and organizational culture. A revolving fund provides a constant focus on continuous improvement to reach a zero carbon footprint.
- Creates a programmatic approach. A revolving fund creates a formal sustainability investment program rather than a series of one-off projects.
- It transforms savings into new opportunities, and multiplies them. The idea is to capitalize, to multiply the positive effect that reinvestment of savings provides in order to promote sustainability in general.
- Allows constant monitoring of performance. You can't administer and manage what you don't measure.

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<sup>2</sup> The fact that the revolving effect is achieved means that the previous projects have been successful. In other words, there have been savings, and the savings have been returned to the fund

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- Allows you to take advantage of new fundraising opportunities in various rounds of funding.

## 4. The On Tax Financing and On Bill Financing mechanisms

In general, the On Bill Financing and On Tax Financing developments provide firm payment mechanisms, based on the payment of energy services through the receipt of the electricity trading company or utility in general (On Bill Financing), or through some tax concept. Given that there is hardly any arrears in either, it is considered that payment through the energy bill or through tax collection do not include the risk of non-payment and consequently it is possible to achieve better financial conditions in terms of cost and time.

## 5. Success stories and international references

We have mentioned that the three proposed solutions are currently under development in some countries. Below we analyze some of the most relevant experiences for the cases of GRF and On Tax Financing mechanisms. The Nord Pas de Calais Instrument is currently being implemented in this region of northern France, and the most internationally recognized On Bill Financing mechanism is the British Green Deal, which has not been a successful program due to various dilemmas in its configuration and communication.

### 5.1. GRFs in the United States

The best reference for GRF (Green Revolving Fund) is under the program defined by the program "The Billion Dollar Green Challenge"<sup>3</sup>, which promotes "The Challenge" to

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<sup>3</sup> <http://greenbillion.org/>



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colleges, universities and other non-profit institutions to invest a combined total of one billion dollars in energy improvement in their own facilities. The challenge was launched in October 2011.

As of September 2017, "Second Nature" is the institution responsible for managing GRFs linked to higher education institutions, and the "Sustainable Endowments Institute" is the institution responsible for administering the GRFs of state and local governments, hospitals, and nonprofit organizations. GreenBillion.org continues to provide GRF-related research results, case studies and reports at all times.

The GRFs lend money to specific projects, which then repay the loan through an internal transfer of the economic savings achieved in the institution's budget. Participating institutions will achieve reductions in operating expenses and greenhouse gas emissions, while creating reinvestment funds for future projects.

Through The Challenge, the *Sustainable Endowments Institute* and participating institutions are developing resources, not just financial resources, to support efficiency in colleges, universities and other non-profit institutions.

The program currently has 62 participating institutions and a total cumulative committed investment of \$131 million. Some references from participants and their GRFs are the Harvard Green Revolving Fund<sup>4</sup> at Harvard University, and the UCLA Energy and Sustainability Revolving Fund<sup>5</sup> at the University of California Los Angeles (UCLA).

## 5.2. The PACE Program in the United States

The best reference for the success of a program based on On Tax Financing is the PACE (Property Assessed Clean Energy) program, created in California in 2008 and subsequently extended to various states of the United States, which, as of May 2017,

<sup>4</sup> <https://green.harvard.edu/programs/green-revolving-fund>

<sup>5</sup> <https://www.sustain.ucla.edu/our-initiatives/climate-and-energy/ucla-energy-and-sustainability-revolving-fund/>

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counted 148,000 renovated homes, 40,000 jobs created and a private investment generated worth 4,000 million dollars.

The implementation of the PACE program in the United States required the development of a specific legal framework, through which the local administration collaborates in order to ensure that private funds can be obtained, which are used to finance improvements in the EE & ER of dwellings and commercial and industrial premises through a loan to their owners, granted in the medium or long term (up to 20 years). The loan is linked to the property and is returned to the PACE Program Manager through the on-tax financing receipt, so that for a few years the real estate is taxed with the obligation to repay the capital and the corresponding interest. In this way, if the property is sold, the obligation to pay the lien remains linked to it, so it is the new owner who is responsible for the payment. The Administration collects payments through the levy, and returns them to private funds as it collects them.

From a financial point of view, the PACE program achieves a highly efficient and scalable model in terms of access to finance for people with low or medium solvency profiles, at a very competitive cost. There are several key elements to achieving a large volume of resources with maximum efficiency:

- Use of a real guarantee to guarantee the capital. The recovery of initial capital and interest through the real estate tax receipt assumes that the financed property is guaranteeing the return of the investment (in the same way that the collection of the property tax is guaranteed by the real estate itself). This element is key, on the one hand, to maintain the cost of financing at a moderate level (by reducing the risk associated with it by having a real guarantee) and, on the other hand, to offer access to financing to people with a medium or low creditworthiness profile.
- Use of a system for the collection of capital and interest already existing: the organized for the collection of property tax. The synergies obtained from the use

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of the pre-existing administrative process and resources for the collection of a new levy allow very significant savings that help to keep the cost of financing low.

- Evaluation of the projects by an independent technical team with criteria adjusted to predefined standards. Each PACE program defines precisely the type of actions it can finance. This model transmits security and confidence: a) to the Administration, because it knows it is making good use of the available resources; b) to the owners, because they know that the investment made is going to be translated into significant energy savings, and c) to the financiers, because they know that the resources contributed are used in projects that increase the market value of the building that is guaranteeing the capital invested. To this end, the program needs to be run by a specialized organization that provides all the necessary support to all parties.

This model makes possible to tackle different social challenges of great relevance:

- It makes possible to combat energy poverty by improving the habitability of dwellings at an affordable cost (the annual savings in the energy bill may be higher than the annual levy for improving the EE).
- It makes possible to combat climate change by reducing CO2 emissions thanks to lower energy consumption.
- It allows the local labor market to be revitalized, as the refurbishment of old buildings is an activity with a high demand and, therefore, with a great potential for generating jobs: it is estimated that for every million euros invested in refurbishment, 18 stable jobs are generated. In addition, the profiles required to fill these jobs may come from people who have lost their jobs in construction due to the real estate crisis but who are susceptible to re-entry the market after receiving the relevant training. These are groups with complex job reinsertion profiles.

## 6. A PACE program for Europe: EuroPace

There is a proposal to create a PACE program for Europe, supported in its design and configuration by a Horizon 2020 project already approved by the EU, and called EuroPace, whose implementation has begun in 2018 and will end in 2020.

The social, legal, cultural, etc. reality of the USA is very different from that of Spain, but the reference of success is important, and only some normative modifications related to local treasuries would have to be made. The norm that should be modified is the Revised Text of the Law Regulating Local Treasuries, approved by Royal Legislative Decree 2/2004, of 5 March (TRLRHL), since the key to the success of the PACE program in the USA is, without a doubt, the on-tax financing scheme, or, in other words, the collaboration that the local public power offers to the lender who agrees to finance the refurbishment works.

The proposal is to create a surcharge on the real estate tax (IBI) equivalent to the instalment that, by way of amortization of capital and interest, must be paid during the same annual period by the owner of the building in which a work by EE included in the program designed for this purpose has been carried out.

The proposal states that this surcharge will not have the nature of a local authority's own resource, but will be recognized for what it is, namely as a monetary consideration paid by the borrower to compensate the lender, but collected by the local authority to be delivered to the lender and which will enjoy, for collection, the same regime as public law revenues. This surcharge cannot have a budgetary consideration and must therefore be treated as a non-budgetary concept.

As is evident from the above, the imposition of this surcharge must have the following characteristics:

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- a) It must come from a prior agreement between the lender and the borrower; it must therefore arise from the autonomy of the will of both parties, achieved with the support or mediation of the City Council and/or the managing body of the EuroPACE program.
- b) It cannot be general to all taxpayers, but must fall exclusively on those who have expressed a desire to bear it because they have benefited from the EuroPACE program.
- c) It must be individualized, since each work of EE executed has a different cost, and can have a different amortization term.

In addition, in order to combat energy poverty effectively, this surcharge must be able to co-exist with a tax credit on the share of IBI, to be paid by the municipal public treasury, to enable people with fewer economic resources to benefit fully from the EuroPACE program.

In accordance with the above, and in order to enable the implementation of the EuroPACE program in Spain, it would be considered necessary to add an Article 72a to the TRLRHL and modify Article 74 of the same Text, adding a paragraph 6.

## Conclusion

We all take energy efficiency as essential and public policies recognize this statement, prioritizing measures that promote, among others, the energy renovation of the building stock in Europe, responsible for 40% of primary energy consumption and 36% of CO<sub>2</sub> emissions. However, throughout this course we have observed how financing is an important barrier to its definitive impulse, and channeling its viability is essential to boost renovation and stimulate innovative investments in a high potential market.

Among the barriers observed, we have highlighted those that cause distrust and lack of comfort for the owners in this highly complex technical project profile, and the limitation on the part of the end user to get into debt or have their own resources with which undertake an energy renovation of their home. The solutions are not easy, and involve developing alternatives that facilitate trust and comfort, and that allow financing that does not involve a severe restriction to the owner.

Despite the difficulty, there is already evidence that shows that it is possible to break this circle, such as different experiences around the world based on models of development and management of attractive and successful financial instruments has shown, with public participation and leverage effect, capable of dragging the private investor, facilitating and encouraging the participation of all stakeholders through renovation programs with innovative formulas that bring advantages for all.

The policies and targets set by the European Commission for 2020 and 2030 show the importance of energy efficiency in terms of security, economic savings, fight against energy poverty, environmental improvement and job creation. Achieving them depends to a large extent on financial mobilization in line with the measures to be taken. In a context of reduced budgets on the part of public bodies, it is vital to bet on innovative financing formulas that attract massive private investment and financing in a very wide

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market, which are not only investment opportunities, but also lead to a greener and more sustainable future.



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