

# sustaiNAVility

NAVARRA, A REGION SUPPORTING THE SUSTAINABLE ENERGY

## D7.1 Guidelines for implementation of innovative financial plans

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## List of Acronyms

AIN: Association of the industry of Navarra, partner of the project  
 CEF: Connecting Europe facility programme  
 CF: Cohesion fund  
 COVID: Coronavirus disease  
 cPPP: Contractual public-private partnerships  
 DEEP: De-risking energy efficiency platform  
 EAFRD: European agricultural fund for rural development  
 EASME: Executive agency for small and medium enterprises  
 EBRD: European bank for reconstruction and development  
 EeB: Energy-efficient buildings  
 EEE-F: European energy efficiency fund  
 EEFIG: Energy efficiency financial institutions group  
 EEM: Energy efficiency mortgage  
 EIB: European investment bank  
 EIF: European investment fund  
 EIT: European institute of innovation and technology  
 ELENA: European local energy assistance  
 EMFF: European maritime and fisheries fund  
 EPBD: Energy performance of buildings Directive  
 EPC: Energy performance contract  
 ERDF: European regional development fund  
 ESCO: Energy services company  
 ESF: European social fund  
 ESIF: European structural and investment funds  
 EU: European Union  
 GHG: Greenhouse gas  
 GNAV: Government of Navarra, project coordinator  
 GNI: Gross national income  
 H2020: Horizon 2020 programme  
 HVAC: Heating, ventilation, and air conditioning  
 IDAE: Institute for energy diversification and savings (Spain)  
 IEE: Intelligent Energy Europe programme  
 JU: Joint undertaking  
 LABEEF: Latvian building energy efficiency facility  
 MLEI: Mobilising local energy investments  
 MMA: Metalworking and metal articles  
 NACE: Nomenclature of Economic Activities  
 NASUVINSA: Navarra de Suelo y Vivienda, project partner  
 NECP: National energy and climate plans  
 NGO: Non-governmental organisation  
 NZEB: Nearly zero-energy buildings  
 OBF: On-Bill financing  
 OBR: On-Bill repayment  
 PACE: Property assessed clean energy financing  
 PCP: Pre-commercial procurement

PDA: Project development assistance

PF4EE: Private finance for energy efficiency

PPI: Public procurement for innovation

PPP: Public-private partnership

R&D: Research and development

RES: Renewable energy sources

RLF: Revolving loan fund

SEI: Sustainable energy investment

SEO: State and territory energy offices

SFSB: Smart finance for smart buildings

SME: Small and medium enterprises

SPIRE: Sustainable process industry through resource and energy efficiency

UNEP FI: United Nations Environment Program Finance Initiative

## 1 Scope

In the context of the new **European Green Deal** strategy, whose target is that the EU becomes climate neutral in 2050, and in line with other EU energy & climate related policy strategies, a broad range of economic sectors are affected, such as: energy production, transport, industrial activity and residential sectors, among others. The EU strategies affect not only to the implementation of new facilities / projects in these sectors, but also require the improvement / refurbishment of the existing ones by means of energy efficiency measures.

The main advantage of **energy efficiency investments** is that they all provide a long-term saving which makes the investment profitable. This means that the economic savings that the energy consumer will have in the future due to the energy-efficiency investment will cover the investment costs in a reasonable period of time (usually 3 to 5-10 years, depending on the type of project: i.e. industrial, residential, etc).

The main drawback, once the long-term saving is assessed as profitable, is that the execution of the energy-efficiency project usually requires a large initial investment. The financing of this investment is the main barrier at this stage, in such an extent that some long-term profitable. energy-efficiency investment projects do not come to reality due to the lack of appropriate financing tools and strategies.

To facilitate the implementation of such energy efficiency investments, this document of the SustainAVility project (funded by the H2020 programme) will **recommend some guidelines** on how to apply innovative financial plans to different types of energy efficiency investment projects.

The document will initially describe the different types of energy efficiency investments, as addressed in the SustainAVility project. Secondly, it will identify the main activities, stakeholders and policies that are fostering the implementation of energy efficiency measures in Europe. Thirdly, it will perform a literature analysis and desk research about identified traditional and innovative financial schemes, including on-tax financing, public procurement for innovation, public-private partnerships, etc. They will be analysed to understand whether and how they are used in the regions/cities and how they could be incorporated into replication plans. Fourthly, it will present the experience in the region of Navarra. And finally, it will recommend a set of guidelines so that the most interesting financial plans could be put in place and the appropriate financial schemes could be applied to each type of energy efficiency projects.

## 2 Types of energy efficiency investment projects

Following the investment grouping used in SustainAVility project, several types and subtypes of energy efficiency investment projects have been identified:

1. Municipal and regional facilities
2. Participative RES production facilities
3. Buildings. Three subtypes have been defined in this category:
  - 3.A. Residential buildings – Publicly owned
  - 3.B. Residential buildings – Privately owned
  - 3.C. Non-residential buildings
4. Industry

For each of these types and subtypes, a fiche describing the key features that need to be addressed to obtain financing are identified. These key features are:

- ✦ **Description:** Short description to unequivocally identify and classify the investment project.
- ✦ **Involved actors:** The owners and the users of these types of projects are not always the same. Each type of actor has a different role, and therefore they need to be identified. Moreover, other additional types of actors may have an important role to play in each case.
- ✦ **Energy efficiency measures:** More detailed description of the energy efficiency measures to be implemented in each type of project.
- ✦ **Cost structure:** Identification of the type of items and costs included in an energy efficiency investment of the corresponding type.

### 2.1 Municipal and regional facilities

Table 2-1 Fiche of Municipal & regional facilities' energy efficiency investment projects

1. MUNICIPAL & REGIONAL FACILITIES	
<b>Description</b>	These are energy efficiency investments carried out by local administrations (municipalities) or the regional government to reduce the energy consumption of the infrastructures / facilities of the town or belonging to the regional administration..
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owner of the infrastructures:</u> the municipality or the regional government (directly or through a public legal entity).</li> <li>• <u>Users of the infrastructures:</u> citizens, municipal and regional employees, etc.</li> </ul>



<b>Energy efficiency measures</b>	<ul style="list-style-type: none"> <li>• <u>Lighting</u>: replacement of municipal lighting with low energy consumption systems.</li> <li>• <u>HVAC</u>: replacement of municipal HVAC systems with high-efficient ones.</li> <li>• <u>RES</u>: Installation of renewable energy production facilities.</li> <li>• <u>E-mobility</u>: Purchase of electric vehicles to replace the public fossil fuel vehicle fleet and installation of charging infrastructures.</li> </ul>
<b>Cost structure</b>	<p>Implementation of this type of projects involve the following costs:</p> <p><u>Administrative costs</u>:</p> <ul style="list-style-type: none"> <li>• Initial project description</li> <li>• Detailed civil works execution project</li> </ul> <p><u>Investment costs</u>:</p> <ul style="list-style-type: none"> <li>• More efficient lighting equipment (LED bulbs, new lampposts)</li> <li>• Installation/upgrade of a higher energy-efficient HVAC system</li> <li>• RES equipment (PV panels, wind turbines, biomass boilers, geothermal systems, etc, and electric / electronic equipment)</li> <li>• Electric vehicles, charging points and electric / electronic equipment.</li> </ul>

## 2.2 Participative RES production facilities

Table 2-2 Fiche of Participative RES production facilities' energy efficiency investment projects

2. PARTICIPATIVE RES PRODUCTION FACILITIES	
<b>Description</b>	These are investments in a renewable energy production facility, by means of a joint co-ownership scheme, so that the property does not belong to a single owner (either public or private), but to a joint co-ownership community. The co-owners are generally individuals, although public and/or private legal entities can also make part of the co-owners' community.
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owner of the infrastructures</u>: co-ownership of individuals (some of the owners could be legal entities as well)</li> <li>• <u>Users of the infrastructures</u>: the co-owners of the facilities</li> </ul>
<b>Energy efficiency measures</b>	Investment in new renewable energy generation facilities (i.e a wind turbine, a small or large wind farm, a solar photovoltaic power plant, a solar thermal facility, a biomass energy production facility, etc), by means of a joint co-ownership scheme.
<b>Cost structure</b>	<p>Implementation of this type of projects involve the following costs:</p> <p><u>Administrative costs</u>:</p> <ul style="list-style-type: none"> <li>• External services to build the participative co-operative</li> <li>• Initial project description</li> <li>• Detailed civil works execution project</li> </ul>

	<ul style="list-style-type: none"> <li>• Work licence municipal tax</li> </ul> <p><u>Investment costs:</u></p> <ul style="list-style-type: none"> <li>• RES equipment (PV panels, wind turbines, biomass boilers, geothermal systems, etc, and electric / electronic equipment)</li> </ul>
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## 2.3 Publicly owned, rented residential buildings

Table 2-3 Fiche of Residential, rented, publicly owned buildings' energy efficiency investment projects

3.A RESIDENTIAL BUILDINGS – PUBLICLY OWNED	
<b>Description</b>	<p>These are residential apartment blocks owned by public authorities (municipalities, regional or national governments), which are rented to the citizens. In most of the cases, they are economic apartments rented to low- or medium-income citizens (sometimes referred to as "rental social housing"), being a social measure to improve affordability of housing to all the citizenship</p>
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owner of the building:</u> a public authority (either directly, or through a public legal entity)</li> <li>• <u>Users of the building:</u> individuals (in a tenancy regime)</li> </ul>
<b>Energy efficiency projects</b>	<p>Façade rehabilitation with increased insulation, replacement of windows with higher insulation, replacement of low efficient energy generation units (boilers, etc) by more efficient ones, installation of renewable energy production facilities in/on the building (solar thermal, solar photovoltaic, geothermal, biomass, etc), installation of energy efficient ventilation systems, substitution of lighting systems with more efficient ones, installation of energy-efficiency control devices (i.e. motion sensors, etc), etc.</p>
<b>Cost structure</b>	<p>Implementation of this type of projects involve the following costs:</p> <p><u>Administrative costs:</u></p> <ul style="list-style-type: none"> <li>• Initial architectural project description</li> <li>• Aggregation project for a group of buildings (if applicable)</li> <li>• Detailed civil works execution project</li> <li>• Work licence municipal tax</li> </ul> <p><u>Investment costs:</u></p> <ul style="list-style-type: none"> <li>• Higher insulation façade refurbishment</li> <li>• Installation of higher insulation windows</li> <li>• Installation/upgrade of a higher energy-efficient HVAC system</li> <li>• Installation of renewable energy supply systems: solar thermal, solar photovoltaic, geothermal, biomass, etc.</li> </ul>

## 2.4 Privately owned residential buildings

Table 2-4 Fiche of Residential, privately owned buildings' energy efficiency investment projects

3.B RESIDENTIAL BUILDINGS – PRIVATELY OWNED	
<b>Description</b>	These are residential apartment blocks owned by individuals. In a few cases, this type of apartments could be owned by private legal entities (such as private housing agencies, banks, etc), which could rent the apartments to individuals.
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owners of the building:</u> Individuals</li> <li>• <u>Users of the building:</u> Individuals</li> <li>• <u>Other actors:</u> <ul style="list-style-type: none"> <li>○ Homeowners' association (condominium)</li> <li>○ Property manager of the communally owned building</li> <li>○ Building rehabilitation information offices</li> </ul> </li> </ul>
<b>Energy efficiency projects</b>	Façade rehabilitation with increased insulation, replacement of windows with higher insulation, replacement of low efficient energy generation units (boilers, etc) by more efficient ones, installation of renewable energy production facilities in/on the building (solar thermal, solar photovoltaic, geothermal, biomass, etc), installation of energy efficient ventilation systems, substitution of lighting systems with more efficient ones, installation of energy-efficiency control devices (i.e. motion sensors, etc), etc.
<b>Cost structure</b>	Implementation of this type of projects involve the following costs: <u>Administrative costs:</u> <ul style="list-style-type: none"> <li>• Initial architectural project description</li> <li>• Aggregation project for a group of buildings (if applicable)</li> <li>• Detailed civil works execution project</li> <li>• Work licence municipal tax</li> </ul> <u>Investment costs:</u> <ul style="list-style-type: none"> <li>• Higher insulation façade refurbishment</li> <li>• Installation of higher insulation windows</li> <li>• Installation/upgrade of a higher energy-efficient HVAC system</li> <li>• Installation of renewable energy supply systems: solar thermal, solar photovoltaic, geothermal, biomass, etc.</li> </ul>

## 2.5 Non-residential buildings

Table 2-5 Fiche of Non-residential buildings' energy efficiency investment projects

3.C NON-RESIDENTIAL BUILDINGS	
<b>Description</b>	These are buildings not used for residential purposes, such as offices, shopping centres, etc.
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owner(s) of the building</u>: normally a private legal entity (i.e: a company, or the owner of the shopping centre, etc). A public authority could be the owner in some cases.</li> <li>• <u>Users of the building</u>: employees, customers, etc</li> </ul>
<b>Energy efficiency projects</b>	Façade rehabilitation with increased insulation, replacement of windows with higher insulation, replacement of low efficient energy generation units (boilers, etc) by more efficient ones, installation of renewable energy production facilities in/on the building (solar thermal, solar photovoltaic, geothermal, biomass, etc), installation of energy efficient ventilation systems, substitution of lighting systems with more efficient ones, installation of energy-efficiency control devices (i.e. motion sensors, etc), etc.
<b>Cost structure</b>	Implementation of this type of projects involve the following costs: <u>Administrative costs:</u> <ul style="list-style-type: none"> <li>• Initial architectural project description</li> <li>• Aggregation project for a group of buildings (if applicable)</li> <li>• Detailed civil works execution project</li> <li>• Work licence municipal tax</li> </ul> <u>Investment costs:</u> <ul style="list-style-type: none"> <li>• Higher insulation façade refurbishment</li> <li>• Installation of higher insulation windows</li> <li>• Installation/upgrade of a higher energy-efficient HVAC system</li> <li>• Installation of renewable energy supply systems: solar thermal, solar photovoltaic, geothermal, biomass, etc.</li> </ul>

## 2.6 Energy efficiency investments in the Industry and Service sector

Table 2-6 Fiche of Industrial energy efficiency investment projects

4 INDUSTRY	
<b>Description</b>	An industry is a private or public entity, which has a manufacturing process and produces intermediate or final goods.
<b>Actors involved</b>	<ul style="list-style-type: none"> <li>• <u>Owner</u>: the industry</li> <li>• <u>Service provider</u>: external ESCO</li> </ul>
<b>Energy efficiency projects</b>	<p>The energy efficiency investments could be done, either:</p> <ul style="list-style-type: none"> <li>• <u>In the manufacturing process</u>: All types of energy efficiency investments to reduce energy consumption in the production process (like boiler / furnace upgrades, chiller upgrades, HVAC systems optimisation, lighting upgrades, installation of energy recovery systems and other energy-using equipment improvements)</li> <li>• <u>In the offices and other facilities</u>: Energy-efficient refurbishment of buildings and other facilities, such as: façade rehabilitation with increased insulation, replacement of windows with higher insulation, replacement of low efficient energy generation and HVAC systems by more efficient ones, substitution of lighting systems with more efficient ones, installation of energy-efficiency control devices (i.e. motion sensors, etc), etc.</li> </ul>
<b>Cost structure</b>	<p>Implementation of this type of projects involve the following costs:</p> <p><u>Administrative costs</u>:</p> <ul style="list-style-type: none"> <li>• Initial project description</li> <li>• Detailed works execution project</li> <li>• Energy services provided by an ESCO</li> <li>• Work licence municipal tax</li> </ul> <p><u>Investment costs</u>:</p> <ul style="list-style-type: none"> <li>• More efficient process equipment: like boiler / furnace upgrades, chiller upgrades, HVAC systems optimisation, lighting upgrades, installation of energy recovery systems and other energy-using equipment improvements.</li> <li>• Building and/or other facilities investments: Façade insulation, high insulation windows, high-efficient HVAC systems, etc..</li> </ul>

## 3 EU-level activities to facilitate Energy Efficiency Financing

### 3.1 The context and EU Policies

By using energy more efficiently and thereby consuming less, Europeans can lower their energy bills, help protect the environment, mitigate climate change, improve their life quality and reduce the EU's reliance on external suppliers of oil and gas. To achieve these benefits, the EU established the **Energy Efficiency Directive**.

Moreover, EU measures focus on sectors where the potential for savings is the greatest. Within the different sectors, in 2017, the transport sector accounted for 31 % of total final energy consumption in the EU Member States, followed by the households (27 %), industry (25 %) and services (15 %) sectors<sup>1</sup>. Among them, buildings sector is the one with larger potential for savings, followed by industry. This is why the EU established the **Energy Performance of Buildings Directive**.

In addition, energy efficiency contributes significantly to these other important EU policies:

- ✦ The **European Green Deal**, which aims to make Europe the first climate-neutral continent by 2050, while boosting the competitiveness of European industry and ensuring a just transition for the regions and workers affected.
- ✦ The **Clean energy for all Europeans package**, to facilitate the transition away from fossil fuels towards cleaner energy and to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions.
- ✦ The **Next Generation EU recovery plan** that aims to address the damage caused by the COVID pandemic and invest in a green, digital, social and more resilient EU.

#### 3.1.1 Energy Efficiency Directive

The 2012 Directive on Energy Efficiency, Directive 2012/27/EU, as amended in 2018, sets rules and obligations for achieving the EU's 2020 and 2030 energy efficiency targets.

The key element of the amended directive is a headline **energy efficiency target for 2030 of at least 32.5%**. The target, to be achieved collectively across the EU, is set relative to the 2007 modelling projections for 2030. In absolute terms, this means that EU energy consumption should be no more than 1273 Mtoe (million tonnes of equivalent) of primary energy and/or no more than 956 Mtoe of final energy. Taking account the withdrawal of the UK, the Commission has taken a decision that the equivalent target after the UK no longer applies EU law should be no more than 1128 Mtoe of primary energy and no more than 846 Mtoe of final energy.

Under the amending directive, EU countries will have to achieve new **energy savings of 0.8% each year** of final energy consumption for the 2021-2030 period, except Cyprus and Malta which will have to achieve 0.24% each year instead.

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<sup>1</sup> European Environment Agency (EEA) webpage

Member States are required to draw up integrated 10-year **National Energy and Climate Plans** (NECPs) outlining how they intend to meet the energy efficiency and other targets for 2030.

With the 2018 amendment, updated measures relating to national long-term building renovation strategies are covered under the amended Energy Performance of Buildings Directive (EU)2018/844..

### 3.1.2 Energy Performance of Buildings Directive

To boost energy performance of buildings, the EU has established a legislative framework that includes the Energy Performance of Buildings Directive 2010/31/EU (EPBD), which was amended (2018/844/EU) in 2018 as part of the Clean energy for all Europeans package, and the Energy Efficiency Directive. Together, the directives promote policies that will help:

- ✦ achieve a highly energy efficient and decarbonised building stock by 2050
- ✦ create a stable environment for investment decisions
- ✦ enable consumers and businesses to make more informed choices to save energy and money

The EPBD amendment introduces new elements and sends a strong political signal on the EU's commitment to modernise the buildings sector in light of technological improvements and increase building renovations.

The EPBD covers a broad range of policies and supportive measures that will help national EU governments boost energy performance of buildings and improve the existing building stock. For example:

- ✦ EU countries must establish strong long-term renovation strategies, aiming at decarbonising the national building stocks by 2050, with indicative milestones for 2030, 2040 and 2050. The strategies should contribute to achieving the national energy and climate plans (NECPs) energy efficiency targets;
- ✦ EU countries must set cost-optimal minimum energy performance requirements for new buildings, for existing buildings undergoing major renovation, and for the replacement or retrofit of building elements like heating and cooling systems, roofs and walls;
- ✦ all new buildings must be nearly zero-energy buildings (NZEB) from 31 December 2020. Since 31 December 2018, all new public buildings already need to be NZEB;
- ✦ energy performance certificates must be issued when a building is sold or rented, and inspection schemes for heating and air conditioning systems must be established;
- ✦ electro-mobility is supported by introducing minimum requirements for car parks over a certain size and other minimum infrastructure for smaller buildings;
- ✦ an optional European scheme for rating the 'smart readiness' of buildings is introduced;
- ✦ smart technologies are promoted, including through requirements on the installation of building automation and control systems, and on devices that regulate temperature at room level;
- ✦ health and well-being of building users is addressed, for instance through the consideration of air quality and ventilation;

- ✦ EU countries must draw up lists of national financial measures to improve the energy efficiency of buildings.

In addition to these requirements, under the Energy Efficiency Directive (2012/27/EU), EU countries must make energy efficient renovations to at least 3% of the total floor area of buildings owned and occupied by central governments. National governments are recommended to only purchase buildings that are highly energy efficient.

The Commission has also published a series of recommendations on the building renovation (EU)2019/786 and building modernisation (EU)2019/1019 aspects of the new rules.

### **The Renovation Wave for Europe**

Moreover, the Commission has issued its Communication **A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives**, also related to the European Green Deal. It aims to take further action and create the necessary conditions to scale up renovations (public and private buildings) and reap the significant saving potential of the building sector. This also includes new rules on smart readiness of buildings, which were published alongside the Renovation wave strategy in October 2020.

The objective is to at least double the annual energy renovation rate of residential and non-residential buildings by 2030 and to foster deep energy renovations. Mobilising forces at all levels towards these goals will result in 35 million building units renovated by 2030. The increased rate and depth of renovation will have to be maintained also post-2030 in order to reach EU-wide climate neutrality by 2050.

## **3.2 EU Institutions**

As a brief introduction, the following EU institutions are the main actors involved in issues related to Financing of Energy Efficiency Investments. They are steering the policies, financing instruments, funds, initiatives and projects mentioned in further sections of this document.

### **3.2.1 DG Energy**

This department of the European Commission is responsible for the EU's energy policy: secure, sustainable, and competitively priced energy for Europe. It develops and carries out the Commission's policies on Energy.

### **3.2.2 Executive Agency for Small and Medium-sized Enterprises (EASME)**

The Executive Agency for Small and Medium-sized Enterprises (EASME) has been set-up by the European Commission to manage on its behalf several EU programmes in the fields of SME support & innovation, environment, climate action, energy and maritime affairs.



One of the programme areas managed by EASME is H2020 Energy, including the **Innovative Financing for Energy Efficiency sub-area**, which manages projects such as SustainAVility.

Addressing a financing need of around EUR 100 billion per year, the Innovative Financing for energy efficiency sub-area aims to deliver more investment through stronger private capital participation in energy efficiency investment markets. Activities focus on:

- ✦ Developing innovative financing mechanisms, investment instruments and schemes for energy efficiency that allow the demonstration and uptake of business cases related to energy savings,
- ✦ Kick-starting a large-scale market for energy efficiency finance,
- ✦ Increasing investor confidence and capacity building,
- ✦ Leveraging existing solutions and rollout of energy services to bring relevant stakeholder groups and market organisations closer together,
- ✦ Accelerating the development of the market.

### 3.2.3 European Investment Bank (EIB)

The European Investment Bank (EIB) is a non-profit European Union institution based in Luxembourg that makes loans, guarantees, and provides technical assistance and venture capital for business projects that are expected to further EU policy objectives. It is jointly owned by the EU countries.

The Bank borrows money on capital markets and lends it on favourable terms to projects that support EU objectives. About 90 % of loans are made within the EU. None of the money comes from the EU budget.

The EIB provides 3 main types of products and services:

- ✦ Lending – about 90 % of its total financial commitment. The Bank lends to clients of all sizes to support growth and jobs, and this support often helps to attract other investors
- ✦ 'Blending' – allowing clients to combine EIB financing with additional investment
- ✦ Advising and technical assistance – maximising value for money

The EIB makes loans above EUR 25 million directly. Where smaller loans are involved, it opens credit lines for financial institutions that then lend funds to creditors.

### 3.2.4 European Investment Fund (EIF)

The European Investment Fund (EIF), established in 1994, is a European Union agency for the provision of finance to SMEs (small and medium-sized enterprises), headquartered in Luxembourg. It does not lend money to SMEs directly; rather it provides finance through private banks and funds. Its main operations are in the areas of venture capital and guaranteeing loans.

### 3.3 EU “intermediate” Funds for Administrations and Financial institutions

This section is focused on EU “intermediate” funds to finance energy efficiency investments. This means that they are not directly available to the final users to fund the specific investment projects on Energy Efficiency. Instead, they are transferred to other intermediate Administrations and/or financial institutions (mainly at national and regional level) so that these last ones provide the funding and/or improved funding conditions to the final users’ energy efficiency investment projects.

The financing options directly available to the specific investment projects on Energy Efficiency will be described in sections 4, 5 and 6.

#### **3.3.1 European Structural and Investment Funds (ESI funds / ESIF)**

The family of European Structural and Investment funds (ESI funds, or ESIF) is composed of five distinct funds:

##### **1. European Regional Development Fund (ERDF).**

Its purpose is to transfer money from richer regions (not countries), and invest it in the infrastructure and services of underdeveloped regions. This will allow those regions to start attracting private sector investments, and create jobs on their own.

The ERDF focuses its investments on several key priority areas. This is known as ‘thematic concentration’: (i) Innovation and research; (ii) The digital agenda; (iii) Support for small and medium-sized enterprises (SMEs); and (iv) The low-carbon economy.

##### **2. European Social Fund (ESF);**

The European Social Fund (ESF) is the European Union’s main financial instrument for supporting employment in the member states of the European Union as well as promoting economic and social cohesion.

##### **3. Cohesion Fund (CF);**

The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the EU average. It aims to reduce economic and social disparities and to promote sustainable development. It is now subject to the same rules of programming, management and monitoring as the ERDF and ESF. It funds activities under the following categories: (i) trans-European transport networks, notably priority projects of European interest as identified by the EU (e.g. the Connecting Europe Facility programme); and (ii) environment, where it can also support projects related to energy or transport, as long as they clearly benefit the environment in terms of energy efficiency, use of renewable energy, developing rail transport, supporting intermodality, strengthening public transport, etc.

##### **4. European Agricultural Fund for Rural Development (EAFRD);**

It finances rural development programmes across the Member States and the regions of the Union. Programmes are designed in cooperation between the European Commission and the Member States, taking into account the strategic guidelines for rural development policy adopted by the Council and the priorities laid down by national strategy plans. For the 2014–20 programming period, the Fund focuses on three main objectives: (i) fostering

the competitiveness of agriculture, (ii) ensuring the sustainable management of natural resources, and climate action; and (iii) achieving a balanced territorial development of rural economies and communities including the creation and maintenance of employment.

Cohesion Fund also plays a key role in support of the economic regeneration of rural areas, complementing the actions supported by the EAFRD.

#### 5. European Maritime & Fisheries Fund (EMFF).

It is the fund for the EU's maritime and fisheries policies. In 2014-2020 period, the Fund is used to co-finance projects, along with national funding, in the following activities: (i) helping fishermen in the transition to sustainable fishing; (ii) supporting coastal communities in diversifying their economies; (iii) financing projects that create new jobs and improve quality of life along European coasts; (iv) supporting sustainable aquaculture developments; and (v) making it easier for applicants to access financing.

For the next long-term EU budget 2021-2027, the Commission will simplify and update the type of activities that the fund will support.

ESI Funds allocated EUR 18 billion to energy efficiency in the period 2014-2020. The ESI Funds are delivered through nationally co-financed multiannual programmes, approved by the Commission and implemented by Member States and their regions under shared management. Local authorities are responsible for selecting, implementing and monitoring projects supported by ESI Funds.

### 3.3.2 Guarantees and Loans to Financial Institutions or Public programmes

The **EFSI** is an EU-budget guarantee providing the EIB with a first loss protection. This means that the EIB is able to provide financing to higher-risk projects than they normally would. An independent Investment Committee uses strict criteria to decide whether a project is eligible for EFSI support.

Moreover, EIB provides **loans and guarantees** to improve access to finance and financing conditions for SMEs and mid-caps, channelled through financial institutions. In addition, EIB has also set a European Guarantee Fund in 2020, in response to COVID-19 crisis. Finally, the EIB also develops mandates and partnerships, such as the Private Finance for Energy Efficiency (PF4EE), which targets projects which support the implementation of National Energy Efficiency Action Plans or other energy efficiency programmes of EU Member States.

Figure below shows the EIB activity in Energy Efficiency in the last years.

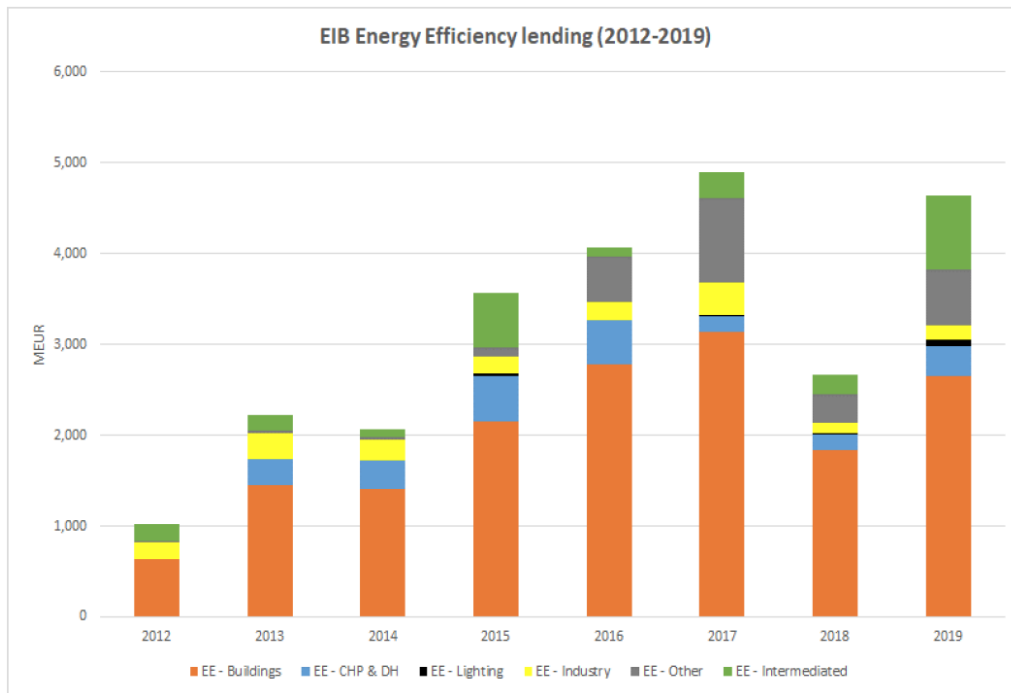


Figure 1 EIB Energy Efficiency lending breakdown per year (2012-2019)

Source: Presentation at the Roundtable on financing energy efficiency in Croatia, 28-29 October 2020)

As shown in Figure 1 above, some EUR 26 billion in the period 2012-19, with an average annual lending of approx. EUR 4 billion in the last five years have been provided. Buildings is the largest subsector with more than 60%.

### 3.4 Other EU Initiatives on Energy Efficiency Financing

The Commission launched the Smart Finance for Smart Buildings (SFSB) initiative, as part of the 'Clean Energy for All Europeans' package. Building on the Investment Plan for Europe. It includes practical solutions to mobilise private financing for energy efficiency and renewables in buildings in the following main areas.

#### 3.4.1 Sustainable Energy Investment Forums:

Since 2016, in cooperation with the Executive Agency for Small and Medium Enterprises (EASME) the Commission is organising a series of Sustainable Energy Investment (SEI) Forums, in order to showcase best practices in developing investment projects and programmes in sustainable energy, and engage dialogue with the financial sector, public authorities, and all stakeholders involved in delivering investments in sustainable energy. This includes:

- ✦ Regional public conferences
- ✦ National Roundtables, and
- ✦ Webinars

In particular, NASUVINSA participated in the first Roundtable on Finance for Energy Efficiency in Spain, on the 25 April 2018 in Madrid, where they presented the energy efficiency experience of the Efidistrict project (mentioned in section 3.5).

### 3.4.2 Support tools from the Energy Efficiency Financial Institutions Group (EEFIG)

The Energy Efficiency Financial Institutions Group (EEFIG) is an expert group established in 2013 by the European Commission Directorate-General for Energy (DG Energy) and the United Nations Environment Program Finance Initiative (UNEP FI). It created an open dialogue and work platform for public and private financial institutions, industry representatives and sector experts to identify the barriers to the long-term financing for energy efficiency and propose policy and market solutions to them. EEFIG has engaged 120 active participants from 100 organisations to deliver clear and unambiguous messages.

<http://eefig.eu/index.php>

The Commission, in collaboration with the EEFIG, has developed two products/tools that aim to inform financial institutions, investors and project promoters about the real benefits and risks of providing financial support to energy efficiency investments:

- ✦ **De-risking Energy Efficiency Platform (DEEP).** DEEP is a pan-EU open-source database containing detailed information and analysis of over 10,000 industrial and buildings-related energy efficiency projects. It builds performance track records and helps project developers, financiers, and investors better assess the risks and benefits of energy efficiency investments across Europe. The Commission encourages all market players to support this initiative by sharing available data and performance track records

<https://deep.eefig.eu/>

- ✦ **Underwriting Toolkit.** The EEFIG's Underwriting Toolkit, a guide to value and risk appraisal for energy efficiency financing, was launched in June 2017. It aims to help financial institutions scale up the deployment of capital into energy efficiency. It also helps promoters develop bankable projects, and can be used by public authorities to better assess energy efficiency projects that receive public funding.

<https://valueandrisk.eefig.eu/>

### 3.4.3 Promotion of EPCs in the public sector

Energy Performance Contracts (EPCs) are a practical way of making public buildings and other public infrastructures more energy efficient: the initial investment is covered by a private partner and repaid by guaranteed energy savings. The use of EPCs is also useful for energy efficiency investments in industry. EPCs are described in section 6.3.

### 3.4.4 Assistance to deployment of Energy Efficiency investments: ELENA & PDA

These are mainly two initiatives (ELENA and PDA), which provide grants to the activities that will enable that a relevant amount of energy efficiency investments are carried out, by means of, for example, technical studies, energy audits, business plans and financial advisory, legal advice, tendering procedure preparation, project bundling, project management, etc.

### **European Local Energy Assistance (ELENA)**

ELENA is a joint initiative by the European Investment Bank (EIB) and the European Commission under the Horizon 2020 programme. It is managed by the EIB and provides a grant to large projects that support investments above €30 million. ELENA provides support to such investments in three different sectors: Energy efficiency; (ii) Sustainable residential; and (iii) Urban transport and mobility. Implementation period should be three years for energy efficiency (residential projects included) and four years for urban transport and mobility.

Activities eligible for ELENA grants include:

- ✦ technical studies, energy audits
- ✦ business plans and financial advisory
- ✦ legal advice
- ✦ tendering procedure preparation
- ✦ project bundling
- ✦ project management

### **Project Development Assistance (PDA)**

Project Development Assistance (PDA) is a topic funded within Horizon 2020 programme, which helps public and private promoters develop model sustainable energy projects, focusing on small and medium-sized energy investments of at least €7.5 million and up to €50 million, covering up to 100% of eligible project development costs. Such eligible costs include building technical, economic and legal expertise needed for project development and leading to the launch of concrete investments.

PDA was previously known as MLEI (Mobilising Local Energy Investments), which was funded under the Intelligent Energy Europe programme.

## **3.5 Relevant EU Projects on Energy Efficiency Financing**

The H2020 programme Results Pack puts a spotlight on 10 spearheading projects – all funded under **H2020 Energy Efficiency** – which have developed innovative solutions to make energy efficiency investments more attractive for private finance:

Acronym	Project Summary
ESI Europe	Replicating an energy savings insurance (ESI) model for SMEs in Europe.
EeDaPP	Developing common energy efficiency reporting criteria on Energy Efficiency Mortgages.
EuroPACE	On-tax financing scheme for renovation of residential homes.
QualitEE	Quality standards for energy efficiency services.
SMARTER	Rolling out the Green Homes/Green Mortgages scheme to 11 countries.

Acronym	Project Summary
SUNSHINE	Setting up an innovative financial instrument based on energy performance contracting and forfaiting for deep retrofit of multi-family buildings in Latvia.
CRREM	Real estate decarbonisation through the Carbon Risk Real Estate Monitor.
I3CP	Building investor confidence for energy efficiency investment in industry and infrastructure.
E-FIX	Setting up innovative financing schemes for energy efficiency in Central and Eastern Europe and the Caucasus region.
TRUSTEE	Energy efficiency and renewable energy investments in industrial process heat

Among them, the following projects have especially relevant results on energy efficiency financing:

- ✦ **EuroPACE**, whose aim is to develop successful innovative financing model to boost investments in sustainable home renovation. The scheme is inspired on the successful US PACE scheme, that was invented in California in 2008. The project includes the development of a one-stop counter (physical and digital) called Hola Domus, and was featured as one of the best practices in the Staff Working Document accompanying the communication on the Renovation Wave.  
The related PACE scheme is explained in section 6.2.
- ✦ **SUNSHINE**, who has successfully set up the Latvian Building Energy Efficiency Facility (LABEEF) to support ambitious energy renovation projects in multi-family buildings (most of which are privately owned) using Energy Performance Contracting (EPC), guaranteed energy savings. LABEEF assumes the EPC contract with the ESCO and continuously collects the payments from the apartment owners, until the renovation investment has refinanced itself. Through this mechanism, the execution risk stays with the ESCO while the financing risk is transferred to LABEEF. To be able to assume the EPC contracts, LABEEF has received a loan from the European Bank for Reconstruction and Development (EBRD).  
The related EPC scheme is explained in section 6.3.
- ✦ **E-FIX** objective is to build capacities among stakeholders and develop long-term strategies for energy financing and piloting model solutions for energy efficiency and renewable energy projects. In particular, it focuses on energy performance contracting, crowdfunding and leasing in the EU and the Eastern Neighbourhood. The project will contribute to boosting energy efficiency investments, increasing relevant know-how across the project region through E-FIX Ambassadors and fostering the development of innovative financing tools.

Moreover, Annex I includes a list of 61 **Project Development Assistance (PDA) projects** funded through ELENA (EIB programme), MLEI-PDA (Intelligent Energy Europe programme), and PDA (H2020 programme), which have supported investments in energy efficiency. Among them:

- ✦ **Efidistrict** project was a MLEI-IEE success case of energy efficiency investments in buildings, led by NASUVINSA in cooperation with the Government of Navarra in the city of Pamplona (Navarra, Spain).
- ✦ **SustainAVility**, which is the current H2020 project, which has promoted energy efficiency investments above €16.3 million in public administrations, public and private buildings and industries in Navarra.

Other related projects are:

- ✦ **ENERINVEST** is an H2020 project which created a consulting platform, aimed to become the reference in Spain, that provides financial, technical and legal solutions to sustainable energy, facilitating the dialogue among the different stakeholders involved. It covers the existing gap between the financial sector and the sustainable energy sector, hence, promoting a higher and more efficient investment in sustainable energy projects.
- ✦ **EE-METAL** is an H2020 project which helped the metal industry to apply energy efficient measures and identify cost-effective measures to decrease its energy related costs with short pay-back actions. The project targeted SMEs from one of Europe's biggest industrial sectors, the Metalworking and Metal Articles (MMA) sector, by presenting energy efficiency and renewable energy solutions and process operations and optimisation techniques. Besides offering tools and methodologies adapted to the specificities of the MMA sector, the project also provided training opportunities in partnering countries.



## 4 Summary of identified financial schemes

Different types of financial plans for energy efficiency investments are appropriate for different scenarios (municipal projects, residential / buildings projects, industrial projects), ambition size (single flat, building-level, district-level, ...) and type of owners (individuals, public entities, private companies, ...). This section presents a summary scheme of the identified financing schemes for energy efficiency investments.

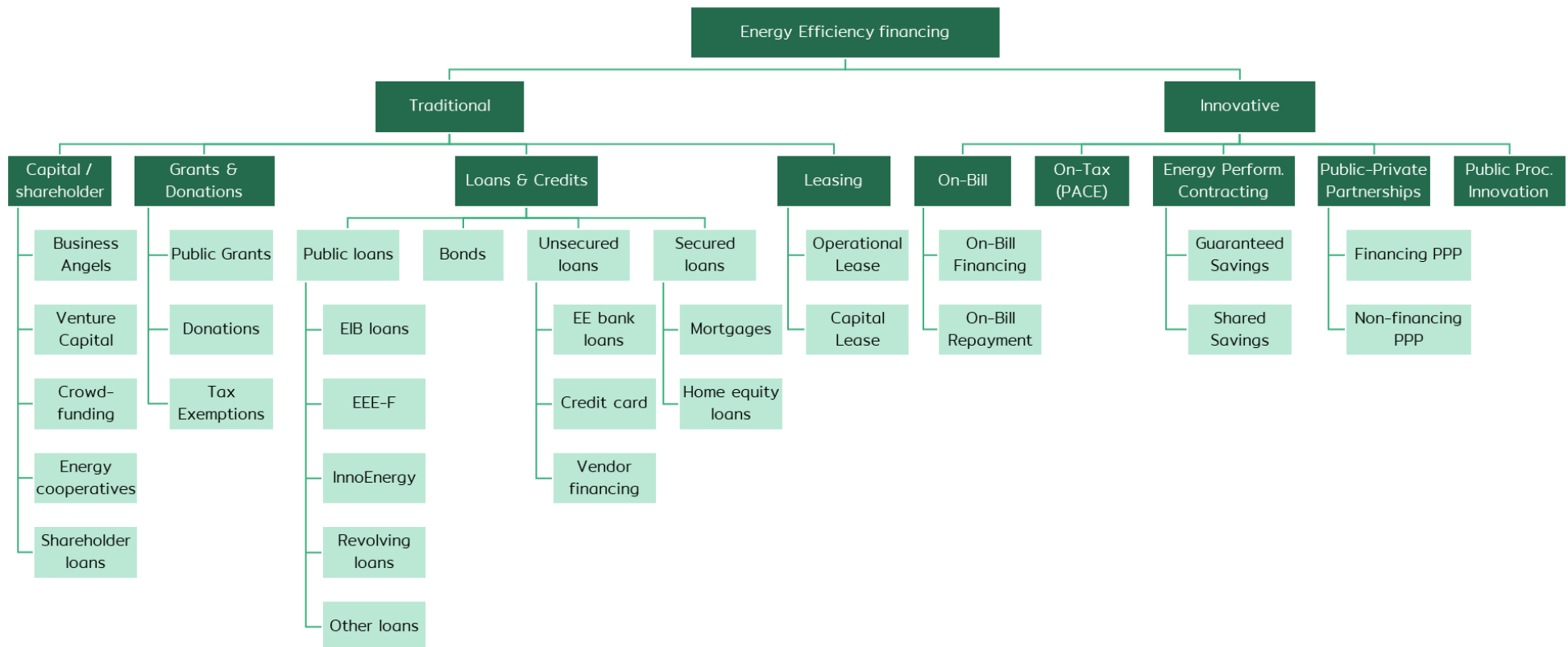


Figure 2 Summary of identified financing schemes

## 5 Traditional financial plans for energy efficiency investments

Different types of financial plans for energy efficiency investments are appropriate for different scenarios (municipal projects, residential / buildings projects, industrial projects), ambition size (single flat, building-level, district-level, ...) and type of owners (individuals, public entities, private companies, ...).

This section will describe the identified more traditional types of financing mechanisms for energy efficiency investments, such as:

- ✦ Capital/Shareholder financing
- ✦ Grants and donations
- ✦ Loans and credits
- ✦ Leasing

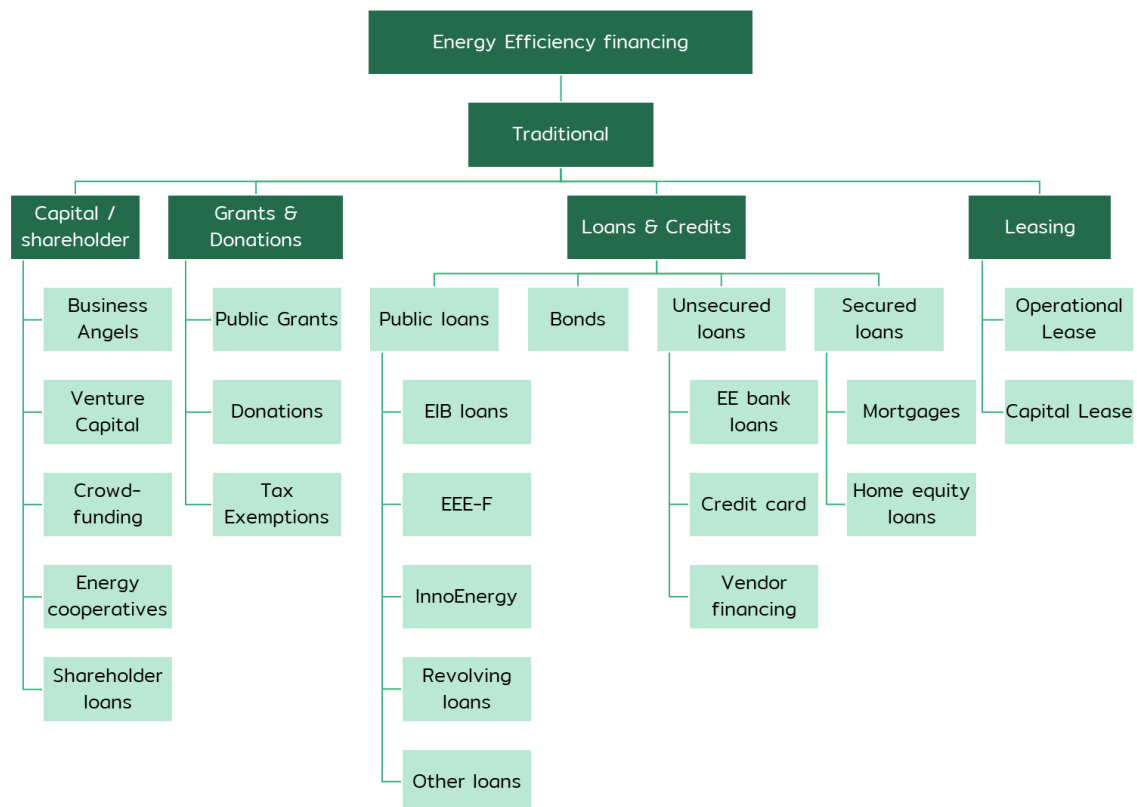


Figure 3 Summary of traditional financing schemes

### 5.1 Capital/Shareholder financing

This is the case when the promoter of a project decides to **share it with other partners** which will provide a financial contribution and as a result of which, they will also become co-owners of the project, in a share according to the contribution provided by each partner. There are several types of capital / shareholder financing:

- **Business Angels:** A business angel is an independent individual who provides capital for the development of a business / project. In addition, usually they can also provide their experience in a certain sector, their specific technical knowledge, access to a network of personal contacts, etc. This type of people usually invests in the early stages of a project / business and they finance initiatives having a certain degree of innovation. They invest their own money into the project, less than would be invested by a venture capitalist. Their main objective is to receive a return on their investment.
- **Venture Capital:** Compared to individual investors (business angels), these are companies whose purpose is to invest their resources to finance other companies or projects. They can be public (usually linked to the development department of a national / regional / local government) or private. There are venture capital companies specialised in energy. Venture capital companies are usually temporarily linked to the project / business. They initially require a good knowledge and trust on the business plan and on the people that are leading the project. After a certain time, they have an exit strategy, where they will resell their shares, ideally with an important gain, because they assume a risk.
- **Crowdfunding:** Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business / project. Crowdfunding is growing in popularity because it allows startup companies to raise money without giving up control to venture capital investors. It also offers investors the opportunity to earn an equity position in the project / business. Crowdfunding usually makes use of the easy accessibility of vast networks of people through social media and/or crowdfunding websites to bring investors and entrepreneurs together. There are different types of crowdfunding:
  - Most of them are **equity-based**: this means that the investors are expecting a revenue from their investment. For example:
    - Crowdequity: the small investors become shareholders and participate in the new business with a share proportional to their contribution.
    - Crowdlending: the small investors receive an interest for their lending, whose rate is usually higher than bank deposits, because risk is higher, too.
  - Some of them are **rewards-based**: investors may simply, as an example, receive a gift for their investment, or be invited to attend to the launching event of a new product, or receive a discount in the supply of energy.
- **Energy cooperatives:** Cooperatives are autonomous associations of individuals who create, design, plan, implement, own and finance with their own savings or resources renewable energy cooperative projects, products and/or services, for the use of their members. One difference between venture capital, crowdfunding and cooperatives, is that cooperatives are controlled by their members -the people who use the cooperative's services or buy its goods- not by investors. Another difference is that cooperatives are not for-profit: any benefit created is reinvested for the shared prosperity of the community and local area, or is used, for example, to reduce the periodic contributions provided by its members.
- **Shareholder loans.** This is a financing alternative intermediate between a shareholder financing (i.e. shares acquisition, business angels, venture capital and equity-based crowdfunding) and a long-term loan to the business. Shareholder loans usually have larger grace and repayment periods than long-term loans. The lender receives a fixed interest

(normally lower than the interest rates offered by conventional long-term loans), and a variable interest based on the evolution of the business (higher the larger benefits / incomes the business has). However, shareholder loans are accounted as equity (capital) in the business accounts, not as debt, which does not compromise the business' debt capacity. Moreover, shareholder loans are subordinated to other debts of the business, which means that in case of default, the lender will be repaid after other conventional lenders, and just before the shareholders.

## 5.2 Grants and Donations

This is the case when the promoter of a project receives money from a third party with no aim of repayment, and furthermore, the third party has no aim to obtain any rights of property or decision taking capacity. This happens with public grants provided by administrations to public and private projects, and also with donations provided to charity-related energy efficiency projects. Finally, tax deductions could be considered as a kind of public grant, where the public authority relieves the taxpayer to pay part of its taxes because of having made energy efficiency investments.

### 5.2.1 Public Grants

Grants are non-repayable funds disbursed or given by one party (grant makers), often a government department, corporation, foundation or trust, to a recipient, often (but not always) a non-profit entity, educational institution, business or an individual to fund a specific project. A grant is one of the ways the government funds ideas and projects to provide public services and stimulate the economy. Grants support critical recovery initiatives, innovative research, and many other programmes, such as energy policies including energy efficiency. Most grants require an application process and need some level of compliance and reporting.

At **European level**, the EU has developed a number of grant schemes and programmes aiming to help businesses, regions, and countries successfully implement energy and energy efficiency projects, such as for example: Connecting Europe Facility-Energy (CEF-Energy), the Innovation Fund, Horizon 2020 (H2020) and Horizon Europe, as well as LIFE programme, among others.

Moreover, the Recovery Plan for Europe, issued very recently to help repair the economic and social damage caused by the coronavirus pandemic, includes grant possibilities for energy efficiency projects. The funds are raised at EU level, and most of them are transferred to the EU countries which are launching national and/or regional calls for projects.

At **national and regional level**, public grants are available in every EU member state for energy efficiency projects. The funds come mainly from the ESI Funds at EU level, which the national and regional administrations manage to set the specific calls for proposals.

National and regional level grants will also be available by means of the special funds raised at EU level in the Recovery Plan for Europe, which are transferred from the EU to the public authorities in each country and region to set the specific calls for projects.

### 5.2.2 Donations

A donation is a gift for charity, humanitarian aid, or to benefit a cause, normally provided by private entities or individuals to NGOs and non-profit organisations. To be classed as a donation, a receipt of funds must have been freely given, with no consequent obligation on the receiver to provide goods or services to the benefit of the donor. Money donations can be used to finance energy efficiency projects.

### 5.2.3 Tax Exemptions and Deductions

Tax exemptions and deductions are legal means of reducing or entirely eliminating the obligation to pay a tax, by means of reducing, respectively, the taxable income or the tax amount due. Tax exemptions and deductions can be used by public authorities to incentivise energy efficiency investments carried out by taxpayers, either legal entities or individuals. Conditions are regulated by the corresponding national or regional tax departments.

## 5.3 Loans and Credits

These are different types of financing agreements with investors in order to obtain a temporal financing for an energy efficiency project (or for whatever other purpose), which will be repaid back to the investor with interest in regular payments until the end of the agreed financing period.

### 5.3.1 Public Loans

Public administrations can offer loans to energy efficiency investment projects (or other investments) with better conditions than other types of normal loans. This is the case when public administration policies intend to promote certain type of investments, for which the administration decides to offer public money to be lent with low interest rates and/or long repayment periods to finance such type of projects.

- EIB loans:** The EIB is a "policy-driven bank" using financing operations to further EU policy goals such as European integration and social cohesion. This includes energy efficiency. The EIB makes loans above EUR 25 million directly. The areas in Energy Efficiency are: (i) Built environment. Either renovation (investments that improve the energy performance of existing buildings) or new constructions (new buildings exceeding highest regulatory standards and contributing to wider policy goals such as urban regeneration, education, public research or the provision of healthcare services), as well as (ii) Other areas: Investments in public lighting, industrial facilities and SMEs motivated by energy efficiency.
- European Energy Efficiency Fund (EEE-F):** The EEE-F is a mix of public-private lending capital. The EEE-F launched in 2011 with the aim of investing in energy saving, energy efficiency and renewable energy projects, particularly in urban settings, achieving at least 20% energy saving or GHG/CO<sub>2</sub> emission reduction. Unlike the PDA facilities, the EEE-F finances both project development and investments. The fund offers senior and junior loans, guarantees or equity participation in projects launched by public authorities, public bodies, or ESCO's working on a public contract. The fund is operationally managed by Deutsche Bank. The initial fund volume is EUR 265 million invested by: the European Union (EUR 125 million), the EIB (EUR 75 million), Cassa Depositi e Prestiti (EUR 60 million), and Deutsche Bank (EUR 5 million). In addition, the EEE-F has a budget to fund project

development activities for the projects in which it brings financing. The leverage factor has to be 20 at least.

- **EIT InnoEnergy:** EIT InnoEnergy is a public-private partnership that provides financing in order to shorten time to market for new energy products and services within eight thematic fields, among which energy efficiency and smart and efficient buildings and cities.
- **Revolving loans:** A revolving loan is a lending, normally provided by public administrations to other public administrations to allow them financing specific projects matching the administration's policy strategies, such as energy efficiency. The specificities of a revolving loan are that the initially lent capital is a pool of money which has not a regular repayment schedule and whose repaid amounts can be borrowed again to finance further projects.

This instrument is being widely used in the United States. State energy Revolving loan funds (RLFs) enable State and Territory Energy Offices (SEOs) and their partners to use an initial capital fund to offer long-term, low-interest financing for a variety of uses, ranging from residential and commercial building retrofits to job creation and industrial efficiency. Because principal and interest repayments are used to reseed the fund, the revolving nature of RLFs allows state programmes to support designated clean energy activities indefinitely. Additionally, RLFs offer states a flexible tool through which they can introduce the market to a variety of clean energy financing approaches, such as energy performance contracts (EPCs), on-bill repayment mechanisms, and public-private partnerships.

<https://www.eda.gov/rlf/>

- **Other public loans:** Public administrations (national, regional or local), can set specific lending programmes to individuals, companies and other public or private beneficiaries, offering low interest rates, to undertake energy efficiency investments aligned with the public strategies. Availability and conditions should be checked in each national / regional / local administration.

### 5.3.2 Bonds

Public administrations and companies can finance their energy efficiency investments (or other investments) by means of a bond emission (government/municipal bonds or corporate bonds, respectively). A bond is a debt instrument, under which the issuer (the public administration or the company) owes a debt to the lenders (the bond holders), and (depending on the terms of the bond) is obliged to pay them interest (the coupon) or to repay the principal at a later date, termed the maturity date. Interest is usually payable at fixed intervals (semiannual, annual, sometimes monthly). Very often the bond is negotiable, that is, the ownership of the instrument can be transferred in the secondary market.

From the point of view of the lender, Government Bonds are considered a risk-free investment and have a lower yield. On the contrary, Corporate Bonds have a higher yield than government bonds as they are riskier. Corporate Bonds have subtypes depending on additional features like Callable Bonds, Convertible Bonds, Deep-Discount -Bonds and Zero-Coupon bonds.

### 5.3.3 Unsecured loans

An unsecured loan is a lending which is not secured against any collateral asset or property. This is the most common type of lending, normally used for loans of relatively small quantity, where the lender assumes all the risk of not recovering the capital lent, without having rights to any of the borrower's assets or properties if the borrower does not make its loan payments back. Normally, interest rates in unsecured loans have a higher cost to the borrower than secured loans, because the lending entity assumes a higher risk of non-repayment.

Unsecured loans may offer a number of advantages for energy efficiency, including:

- Unsecured loans are often less complicated to process and can be done more quickly than secured loans. An unsecured loan product may help reduce transaction barriers, which can be an important consideration in facilitating energy efficiency projects.
- Some borrowers may not have sufficient equity in their home or commercial assets to qualify for a secured loan. Offering an unsecured loan product may broaden access to financing for borrowers in this category.
- Some borrowers may not want to place other assets (such as a home or commercial building) at risk. An unsecured option may be more attractive to these borrowers, reducing one potential barrier to energy efficiency adoption.

There are many types of unsecured loan products that may be used to support energy efficiency projects, including energy efficiency bank loans, credit cards, and unsecured financing offered by equipment manufacturers, vendors, retailers or contractors. Unsecured lending is common outside of energy efficiency, including credit card purchases and student debt.

#### **Energy efficiency bank loans**

These are specific loan products that banks design and provide only for energy efficiency and renewable projects, so they generally have lower interest rates and longer finance periods. They are unsecured loans, more like the personal or "signature" loans or lines of credit that can be taken out from a creditor, which do not require the borrower's home or other asset as collateral. Nonetheless, in some cases the customer could be required to provide security, such as a lien on property or other assets, or guarantees from parent companies, another financier or owners. In the case of legal entities, the loan is accounted on the balance sheet, so it increases the debt of the entity, which sometimes makes this financing option the most attractive one.

Energy efficiency bank loans are a good option for consumers who are unable or unwilling to use an energy efficiency mortgage. They can be approved very fast.

#### **Credit card financing**

A credit card is a payment card issued by a card issuer (normally a bank) to users (cardholders) to enable the cardholder to pay for goods and services based on the cardholder's promise to the card issuer to pay them for the amounts plus the other possible agreed charges. Most credit card loans are unsecured, that is, the borrower does not need to use any property or asset as security / collateral. The card issuer (the bank) creates an account and grants a line of credit to the cardholder, from which the cardholder can borrow money for payment or as a cash advance.

Credit cards were originally secured for personal use, but credit card issuers are targeting business owners for corporate cards as well. Increasing numbers of entrepreneurs have turned

to credit cards to finance their business activities, including business start-up and energy efficiency investments among others.

However, credit cards normally charge high interest rates, making this form of financing very expensive. On the other hand, in terms of using a credit card as a primary means of paying bills monthly, a credit card offers small businesses the administrative benefit of providing detailed records of all charges that may be easily transferred to an accounting process.

### **Vendor financing**

Vendor financing is a financial term that describes the lending of money by a vendor to a customer who uses that capital to purchase that specific vendor's product or service offerings (for example, an energy efficiency technology investment).

Sometimes called "trade credit," vendor financing usually takes the form of deferred loans from the vendor (debt vendor financing). In those cases, the borrower agrees to pay a particular price for the product or service with an agreed-upon interest charge. The sum is repaid over time from the customer to the vendor.

Another option is equity vendor financing, where the vendor can provide goods (i.e. an energy efficiency technology investment) in exchange for an agreed-upon amount of company stock. Vendor financing most commonly occurs when a vendor sees a higher value in a customer's business than a traditional lending institution does. Consequently, a healthy, trusting relationship between the borrower and the vendor sits at the heart of the vendor financing dynamic.

### **5.3.4 Secured loans**

Also known as a collateral loan, a secured loan is when the borrower guarantees the cost of their loan by offering up an asset or property as security. The collateral is an item or property that can be taken if the borrower fails to pay back the loan within its terms.

### **Mortgages**

A mortgage is a debt instrument, secured by the collateral of specified real estate property, that the borrower is obliged to pay back with a predetermined set of payments. If the borrower stops paying back the mortgage, the lender can recover the amount owed by taking ownership of and selling the mortgaged property.

Individuals and businesses use mortgages to make large real estate purchases without paying the entire purchase price up front. Over many years, the borrower repays the loan, plus interest, until she or he owns the property free and clear.

**Energy efficiency mortgages (EEMs)** are a specific type of mortgage. They are similar to a standard home mortgage in that they use the property as collateral for a loan. An EEM can be used to purchase or refinance a home that is already energy-efficient or to purchase or refinance a home that will become energy efficient after energy-saving improvements.

An example to facilitate EEM financing is the H2020-funded EeMMiP project, which is exploring the link between buildings and mortgages and bridge the gap between development of the EEM market.



Furthermore, the Energy Efficient Mortgages (EEM) Initiative is a pan-European private bank financing mechanism that aims to stimulate and finance investment in energy efficient buildings and energy saving renovations by means of two EU funded projects under H2020 programme:

- The Energy Efficient Mortgages Action Plan (EeMAP) Initiative
- The Energy Efficiency Data Portal & Protocol (EeDaPP) Initiative

Finally, within the Sustainable Energy Investment Forums, a webinar was held on 26 September 2017 on the Deployment of Energy Efficient Mortgages in Europe.

### Home equity loans

A home equity loan is a type of second mortgage. The first mortgage is the one used to purchase the property, but additional loans can be placed against the home as well if enough equity has been built up. Home equity loans allow to borrow against the home's value minus the amount of any outstanding mortgages on the property.

## 5.4 Leasing

A lease is an agreement under which a lessee (equipment or service user) pays a lessor (equipment or service owner) for the possession and use of an asset or service, either for a fixed period of time or with the ultimate intention of buying it.

Energy efficient equipment leasing is similar to renting / leasing a car: the lessee needs a car and pays a rent-a-car / leasing company (the lessor), for the right to keep and use the car for some period of time. Like car renting, equipment leasing may also ultimately lead to an outright sale of the leased equipment. In the case of energy efficient equipment, leasing usually ends in the lessee purchasing the equipment.

Depending on the final ownership of the goods or services at the end of leasing period, there are two types of leasing options: Operating leasing and Capital leasing.

### 5.4.1 Operating leasing

Under an Operating lease, the equipment is owned by the financier and the customer obtains the sole right to use it. That is, the lessor maintains ownership of the leased equipment and the lessee does not have to account for the expense on its balance sheet. The rent payments are accounted in the profit and loss account as part of the annual operating expenses.

### 5.4.2 Capital leasing

Under a Capital lease, the lessee intends to ultimately purchase the leased equipment. At the end of the lease, equipment ownership is transferred to the customer on payment of an agreed amount (the purchase / call option). Because the lessee intends to purchase the equipment at the end of the period, the lessee must account it on its balance sheet since the beginning of the leasing period, and account the asset depreciation as appropriate. Capital leases are the most common type of agreement for leasing energy efficient equipment.

## 6 Innovative financial plans for energy efficiency investments

In addition to the more traditional financing mechanisms identified in the previous section, more innovative and less common financing mechanisms for energy efficiency investments have been identified and will be described in this section, such as:

- ✦ Utility On-Bill financing
- ✦ On-Tax financing (PACE)
- ✦ Energy Performance Contracting (EPC)
- ✦ Public-Private Partnerships (PPP)
- ✦ Public Procurement for Innovation

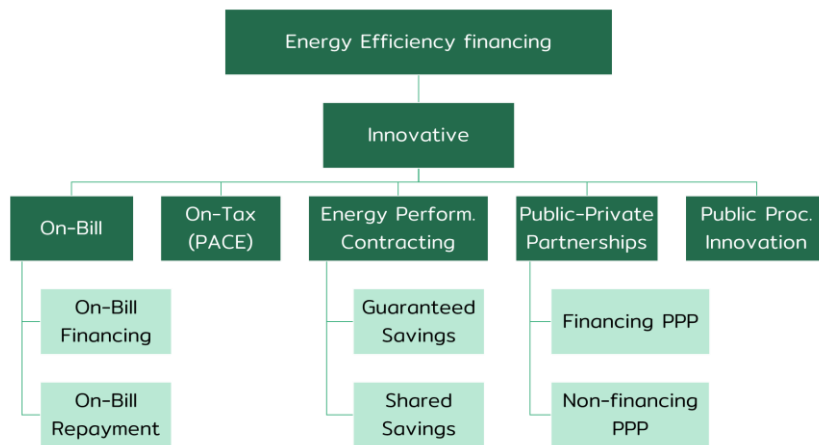


Figure 4 Summary of innovative financing schemes

### 6.1 Utility On-Bill financing

On-bill financing refers to a loan made by an energy utility to a utility customer –such as a homeowner or a commercial building owner–. The energy utility installs the equipment and the customer receives an upfront loan to make such investment. Then the customer repays that loan through a ‘repayment’ charge on his or her utility bills.

Anyhow, the energy improvements obtained with the equipment generate energy savings for the consumer that can offset loan payments partially, fully, or more than fully, in effect lowering the customer’s average monthly bill. In fact, many utilities offer On-Bill financing programmes that pair loan repayment with monthly energy bills to make it easier for homeowners and businesses to invest in energy efficiency improvements for their properties.

There are two modalities: On-Bill financing (OBF) and On-Bill repayment (OBR).

#### 6.1.1 On-Bill financing

With on-bill financing, the utility lends the capital and collects the payments through a surcharge.

### 6.1.2 On-Bill repayment

With on-bill repayment, a third-party private capital provider lends the capital, and the utility acts as a pass-through entity, collecting repayments and sending that money back to the lender.

## 6.2 On-Tax financing (PACE)

On-tax financing is a means of financing energy efficiency investments, renewable energy installations or other investments (such as disaster resiliency improvements or water conservation measures) of buildings (residential or commercial) and industries. This includes, for example, building envelope energy efficiency improvements, such as insulation and air sealing, cool roofs, efficient heating and cooling systems, efficient lighting systems, as well as industrial energy saving investments in the manufacturing process or in the industrial facilities).

On-tax financing helps home and business owners pay for the upfront costs of such investments, which the property owner then pays back by increased property taxes for an agreed-upon term ranging from 5–25 years. This allows property owners not to make (or making a reduced) upfront payment for the investment, while benefitting from the energy savings from the beginning. Savings are usually higher than the tax increase, so that property owners have net gains during all the financing period.

On the other hand, it is the public administration charging the tax who will make the upfront investment not made by the owner, for which the necessary funds need to be available (through private lending, municipal bonds, public-private partnerships, existing budget lines, etc). This cost will be recovered by the administration by means of the increased tax on the property during the financing period.

Moreover, there are two relevant issues to be appropriately addressed when designing and applying this financing system in a certain territory:

- ✦ The financing debt is linked to the property where the investments are made. If the ownership of the property is transferred, the new owner will have to take over the increased tax on the property.
- ✦ Tax increase is a senior debt on the property, which has preference over other junior debts, such as mortgages. This means that if a property already has a mortgage loan which the owner is not able to pay back, it is the tax debt who has preference to be recovered by the public administration before the mortgage provided by a financial entity (usually a bank).

The On-tax financing is originally called PACE (Property Assessed Clean Energy financing) in the United States, which is the country who pioneered this financing system, starting in California in the early 2000s. Currently, most of the US states provide different approaches of PACE financing, sometimes including water efficiency products, seismic retrofits, and hurricane preparedness measures.

In Europe, this financing mechanism is in its early stages of development. It is being promoted through the EuroPACE initiative, led by companies such as GNE Finance in cooperation with

public and private entities and financed through the H2020 programme, with the aim of helping public administrations to appropriately design and apply this type of financing mechanism in Europe.

### 6.3 Energy Performance Contracting (EPC)

Energy Performance Contracting (EPC) is a form of 'creative financing' for capital investment which allows funding energy efficiency upgrades from cost reductions. An EPC is a contract between the energy consumer (this is usually an industry or a public administration, notwithstanding other public or private entities or even individuals in rare occasions), and an energy services company (ESCO), normally privately owned. The ESCO implements a project to deliver energy efficiency and uses the stream of income from the cost savings to repay the costs of the project, including the costs of the investment. EPC by means of an external ESCO is a means to deliver infrastructure improvements to facilities that lack energy engineering skills, manpower or management time, capital funding, understanding of risk, or technology information.

EPC are a common way to implement energy efficiency improvements and frequently cover financing for the needed equipment. The ESCO identifies and evaluates energy-saving opportunities and recommends improvements that can be paid for through savings. The approach is based on the transfer of technical risks from the energy consumer to the ESCO based on performance guarantees given by the ESCO. The ESCO usually guarantees that savings will meet or exceed annual payments to cover all project costs. The agreement clearly identifies the procedures by which these savings are to be measured and verified.

Moreover, the agreement between the energy consumer and the ESCO also identifies which party will make the upfront energy saving investment, and the way such investment will be financed. Depending on this, there are two main types of EPC contracts: guaranteed savings and shared savings.

#### 6.3.1 **Guaranteed Savings**

The most popular performance contract used in the industrial and public sector is called a guaranteed savings agreement. The ESCO undertakes the energy savings analysis, the engineering and technical part of the project and guarantees to the customer the energy savings to be obtained, of which the customer will profit in full.

However, the ESCO does not make the upfront equipment investment. It is the customer who makes the investment on the project equipment and looks for the appropriate financing (normally bank financing). Therefore, the equipment is permanently owned by the customer, which is booked as a debt in its balance sheet and is repaid during the financing period to the bank. Moreover, the customer pays the ESCO a regular fee for the engineering and services provided, during the same time of the equipment financing period. Normally the savings are larger than the cost of the equipment financing and payment to the ESCO, so that the project generates a certain profit every year.

On the other hand, if the anticipated energy savings are not achieved, it is the ESCO who pays to the customer the difference between the guaranteed savings and the obtained savings.

### 6.3.2 Shared Savings

In the shared savings contract, the ESCO undertakes the energy savings analysis, the engineering and technical part of the project and guarantees to the customer the energy savings to be obtained, which will be shared between the customer and the ESCO, in a way where the customer will pay the ESCO an agreed percentage of the savings (i.e 85% of savings for the ESCO, 15% for the customer). However, there is no 'standard' split as this depends on the cost of the project, the length of the contract and the risks taken by the ESCO and the consumer.

Because the ESCO receives part of the savings from the customer, the ESCO will also make the upfront equipment investment and will be in charge of finding the appropriate financing. Therefore, the equipment is initially owned by the ESCO. It usually passes to the customer at the end of the agreement, sometimes by means of a capital leasing. After the end of the contract, the customer will finally receive the full benefit of the obtained savings.

From ESCO's perspective the shared savings approach has the added value of providing the financing service to the customer. However this model tends to create barriers for small-sized ESCOs: small ESCOs that implement projects based on shared savings rapidly become too highly leveraged and unable to contract further debt for subsequent projects. Shared savings concept therefore may limit long-term market growth and competition between ESCOs and between financing institutions: for instance, small and/or new ESCOs with no previous experience in borrowing and few own resources are unlikely to enter the market if such agreements dominate.

## 6.4 Public-Private Partnerships (PPP)

Public-Private Partnerships is a terminology used for two different types of partnerships, one of which involves financing of projects, and the other one of which does not, as explained below.

### 6.4.1 PPPs being a financing partnership

In most parts of the world, public-private partnerships involve collaboration between a government agency and a private-sector company that can be used to finance, build, and operate projects, such as public transport networks, parks, convention centres and other public infrastructures. Financing a public project through a public-private partnership can allow a project to be completed sooner or make it a possibility in the first place.

Public-private partnerships often involve concessions of tax or other operating revenue, protection from liability, or partial ownership rights over nominally public services and property to private sector, for-profit entities. When the project is an Energy Efficiency investment, the PPP usually takes the form of an Energy Performance Contract (EPC) between an ESCO (a

private energy services company) and the government agency leading the project. See previous section 6.3 to see the possible financing alternatives of such Energy Performance Contracting.

#### 6.4.2 PPPs not being a financing partnership

In recent years, the EU started to use the terminology of Public-Private Partnerships in the research and development domain, as a synonym of an association between public administration and private industry, not in order to build and finance a particular project, but to bring research project results closer to the market and improve the link between research and societal growth. Such public-private partnerships take the form of Joint Undertakings (JUs), Contractual public-private partnerships (cPPPs) or European Technology and Innovation Platforms (ETIPs). Some of them, such as the Joint Undertakings, manage public and private funds to be granted to public or private projects by means of competitive calls for proposals.

Within the public-private partnerships in the energy field, there are two contractual public-private partnerships (cPPPs) dealing specifically with Energy Efficiency, none of which are managing funds by means of calls for proposals:

- ✦ Sustainable Process Industry through Resource and Energy Efficiency (SPIRE)  
 SPIRE brings together 150 organisations representing industry, research, and industry associations. It defines the strategic directions to help drive innovation in resource and energy efficiency in the European process industry at technology level and at political level.  
<https://www.spire2030.eu/>
- ✦ Energy Efficient Buildings (EeB)  
 The EeB PPP promotes and supports research and innovation to reduce the energy consumption and CO<sub>2</sub> emissions for new and retrofitted buildings across Europe. It brings together the whole value chain from innovators to citizens, integrating different industries.  
<http://e2b.ectp.org/about-us/our-aims/>

## 6.5 Public Procurement for Innovation (PPI)

Public Procurement for Innovation (PPI) is a demand-side innovation policy instrument in the form of an order, placed by a public organisation, for a new or improved product to fulfil its particular needs. It happens when the public sector uses its purchasing power as an early adopter of innovative solutions which are not yet available on large-scale commercial basis.

PPI works in the following way:

- ✦ The first step is to form a critical mass of public purchasing power on the demand side (one large-enough buyer or several smaller buyers in a buyers' group). This mass should be large enough to incentivise industry to scale up the production to bring solutions to the market with the price and quality requirements for large scale deployment.
- ✦ For the second step, the procurer(s) make an early announcement of the innovation needs (with the required functionality/performance and possibly also price requirements). They express the intention to buy a critical mass of innovative products if industry can bring

them to the market with the predefined price/quality requirements by a specific date. The procurers may wish to perform conformance testing of solutions of suppliers that have come forward with potential solutions by the target date. This is done to verify that there are indeed solutions that can meet their needs, before actually procuring the innovative solutions.

- ✦ The third step is the actual public procurement of the innovative solutions through one of the existing public procurement procedures (e.g. open/negotiated procedure, competitive dialogue etc).

As a final additional point, PPI is different and complementary with Pre-Commercial Procurement (PCP), as PPI can enable larger scale deployment of solutions that were developed in small quantity in a preceding PCP. PPI can also be used independently, to bring to the market innovative solutions that do not result from R&D but for example from organisational or process innovation

Focusing Public Procurement of Innovation **within the area of Energy Efficiency Investments** addressed in SustainAVility project, unfortunately not much progress seems having been done yet in the EU. Within the EU's Horizon 2020 research & innovation programme, a set of 3 webinars were organised by EASME on 22nd March 2017 to support the procurement of energy efficient solutions and the realisation of energy efficiency projects by funding Public Procurement of Innovative Solutions (including parts of purchasing costs), Project Development Assistance, the development and roll-out of innovative financing schemes and making the energy efficiency market investible. Applications for funding were open until 7th June 2017.

That webinar explained in particular the conditions of Topic EE-19-2017: "Public Procurement of Innovative Solutions for energy efficiency" included in H2020's 2017 call for proposals. The topic had an available EU funding of EUR 4 million to support actions enabling a group of procurers (buyers group) to undertake a PPI procurement for innovative solutions for, products, services buildings (NZEB, renovation) which were not yet available on a large-scale commercial basis, and which had energy performance levels that were better than the best levels available on the market. The expected funding to be applied for by each project was between EUR 1 and 2 million.

However, after a search in the EU CORDIS database, no project has been found having received an H2020 grant under this topic. This means that there were no applications submitted, which had enough quality to pass the evaluation thresholds.

Moreover, after a literature search on "Public Procurement for innovation" and "Energy Efficiency", no other significant results were found about projects and/or initiatives in this particular subject.

As a result, it seems to us that a relevant room for development, among all types of stakeholders in the EU (public authorities, private and public promoters of PPI projects, financing entities, research entities, etc), is still available in this area in the coming years.

## 7 Energy Efficiency in Navarra

Navarra is one of the pioneering regions in Europe in the energy field. With no coal, oil or gas of its own, this mountainous region in Northern Spain deliberately went for **renewable energy** in the late 1980s, with the installation renewable energy electricity generation facilities (wind farms, solar PV installations, biomass plants, etc) among other measures. Currently, about 85% of the regional electricity consumption is produced by renewable sources in the region. Moreover, a relevant economic activity has been generated.

Navarra keeps having a high energy commitment, as shown in the Energy Plan of Navarra 2030 (PEN 2030), which has the objective that all the energy supplies for the generation of electricity and heat and their use in industry and transport have a renewable origin in 2050. This also means a GHG zero-emission scenario in 2050. In terms of **energy efficiency**, the plan intends to reduce 10% of the primary energy consumption by means of energy efficiency actions, compared to the value estimated in 2025, as well as 10% compared to 2030.

With this target, GNAV offers the following **financing opportunities for energy efficiency**:

- ✦ Grants for Energy Efficiency, Renewables and Sustainable mobility in Non-profit Entities. [http://www.navarra.es/home\\_es/Servicios/ficha/8714/Subvenciones-a-entidades-sin-animo-de-lucro-para-la-promocion-de-la-eficiencia-energetica-las-energias-renovables-y-la-movilidad-sostenible-y-compartida-2020](http://www.navarra.es/home_es/Servicios/ficha/8714/Subvenciones-a-entidades-sin-animo-de-lucro-para-la-promocion-de-la-eficiencia-energetica-las-energias-renovables-y-la-movilidad-sostenible-y-compartida-2020)
- ✦ Grants for Energy Efficiency, Renewables and Sustainable mobility in Local Administrations. [http://www.navarra.es/home\\_es/ServiciosEmpleado/ficha/16918/Convocatoria-de-ayudas-a-entidades-locales-para-la-promocion-de-la-eficiencia-energetica-la-implementacion-de-energias-renovables-y-el-impulso-de-la-movilidad-electrica-2020](http://www.navarra.es/home_es/ServiciosEmpleado/ficha/16918/Convocatoria-de-ayudas-a-entidades-locales-para-la-promocion-de-la-eficiencia-energetica-la-implementacion-de-energias-renovables-y-el-impulso-de-la-movilidad-electrica-2020)
- ✦ Extraordinary fund to Local Administrations for investments to boost local economy (COVID). Article 4 provides, among other items, funding for energy efficiency and sustainable urban mobility. <https://www.parlamentodenavarra.es/sites/default/files/boletines/B2020070.pdf>
- ✦ Grants for refurbishment of social housing, including energy efficiency investments in the building envelope as well as centralised and improved energy supply (HVAC) systems. <http://www.navarra.es/NR/rdonlyres/9171F4BC-FACB-4EB3-A482-DE4508F227AD/0/Rehabilitacion.pdf>
- ✦ Grants for homeowners' associations for energy efficiency refurbishment investments in existing buildings. (PREE extraordinary programme). [http://www.navarra.es/home\\_es/servicios/ficha/8936/Ayudas-para-actuaciones-de-rehabilitacion-energeticas-en-edificios-existentes-Programa-PREE](http://www.navarra.es/home_es/servicios/ficha/8936/Ayudas-para-actuaciones-de-rehabilitacion-energeticas-en-edificios-existentes-Programa-PREE)
- ✦ Grants for Energy Efficiency in SMEs and large industrial sector (specific NACE codes). [http://www.navarra.es/home\\_es/Servicios/ficha/8289/Ayudas-para-actuaciones-de-eficiencia-energetica-en-PYME-y-gran-empresa-del-sector-industrial](http://www.navarra.es/home_es/Servicios/ficha/8289/Ayudas-para-actuaciones-de-eficiencia-energetica-en-PYME-y-gran-empresa-del-sector-industrial)
- ✦ Grants for the competitiveness improvement of touristic SMEs in Navarra. The fifth clause provides that part of the funded investments corresponds to sustainability improvement. [https://www.navarra.es/home\\_es/Servicios/ficha/8657/Subvenciones-de-2020-para-la-mejora-de-la-competitividad-de-las-pymes-turisticas-inscritas-en-el-Registro-de-Turismo-de-Navarra](https://www.navarra.es/home_es/Servicios/ficha/8657/Subvenciones-de-2020-para-la-mejora-de-la-competitividad-de-las-pymes-turisticas-inscritas-en-el-Registro-de-Turismo-de-Navarra)



In addition, there are other **financing possibilities to other energy-related projects**, such as:

- ✦ Tax exemptions for renewable energy generation and electric mobility.  
[http://www.navarra.es/home\\_es/servicios/ficha/5240/Informe-de-inversiones-en-instalaciones-de-energias-renovables-y-en-sistemas-de-recarga](http://www.navarra.es/home_es/servicios/ficha/5240/Informe-de-inversiones-en-instalaciones-de-energias-renovables-y-en-sistemas-de-recarga)
- ✦ Grants for renewable electricity and heat energy generation. The budget line coming from IDAE through ERDF funds was already used in previous calls.
- ✦ Moves II plan for sustainable mobility.  
[http://www.navarra.es/home\\_es/Servicios/ficha/8661/programa-de-incentivos-a-la-movilidad-eficiente-y-sostenible-\(Programa-MOVES-II\)-2020](http://www.navarra.es/home_es/Servicios/ficha/8661/programa-de-incentivos-a-la-movilidad-eficiente-y-sostenible-(Programa-MOVES-II)-2020)
- ✦ Grants for Improvement of Competitiveness 2020. Item 3 deals with circular economy and process-product.  
[http://www.navarra.es/home\\_es/Servicios/ficha/8721/Ayudas-para-mejora-de-la-competitividad-2020](http://www.navarra.es/home_es/Servicios/ficha/8721/Ayudas-para-mejora-de-la-competitividad-2020)

Finally, there are several **remarkable pilot projects** in terms of energy efficiency and participative projects developed in Navarra, such as:

- ✦ Energy Efficiency project development assistance projects, such as Efidistrict (funded by IEE programme) and SustaiNAVility (funded by H2020).
- ✦ Public-Private Participative projects, such as Navarra Arena (GNAV is leading the creation of a Citizen Energy Community in the surroundings of the Navarra Arena multipurpose pavilion, where a 99 kW nominal power, shared self-consumption, photovoltaic installation will be implemented on the roof of the pavilion that will serve as the basis for the constitution of the future community) and Garés Energía (the municipality of Puente la Reina / Garés desires in the short term to supply itself with the electrical energy generated by the “Electra-Irrigation” mini-hydraulic power plant, the sports hall PV installation and the different other individual PV installations, and in the medium - long term (2018 - 2030) to advance towards self-sufficiency, increasing the generation capacity of renewable and endogenous energies of the public administration itself and the private sector of the municipality).

## 8 Financing mechanisms per type of energy efficiency investment

The financial options presented in previous sections, are more appropriate for certain types of investments than for others. The following table indicates with a green tick which financing mechanisms are most appropriate for each type of investment. Absence of a tick means either that the financing option is not very usual or either that it is appropriate to certain particular cases, or either that it is just not appropriate.

Table 8-1 Financing mechanisms per type of energy efficiency investment

Financing mechanism	1 Municipal & regional facilities	2 Participative RES production	3A Residential public buildings	3B Residential private buildings	3C Non- residential buildings	4 Industry
Capital/shareholder						
Business Angels		✓				✓
Venture Capital		✓				✓
Crowdfunding		✓				✓
Energy cooperatives		✓				
Shareholder loans		✓			✓	✓
Grants & Donations						
Public grants	✓	✓	✓	✓	✓	✓
Donations	✓	✓	✓	✓	✓	✓
Tax exemptions & deductions		✓		✓	✓	✓
Loans & Credits						
Public loans	✓	✓	✓	✓	✓	✓
Bonds	✓		✓		✓	✓
Unsecured loans	✓	✓	✓	✓	✓	✓
Secured loans	✓	✓	✓	✓	✓	✓
Leasing						
Operational lease						✓
Capital lease	✓	✓			✓	✓
Innovative options						
Utility On-Bill	✓	✓	✓	✓	✓	✓
On-Tax		✓		✓	✓	✓
Energy performance contracting	✓		✓	✓	✓	✓
Public-private partnerships	✓					✓
Public procurement of innovation	✓		✓		✓	✓


## 9 Conclusions. Guidelines / recommendations for implementation of innovative financial plans for energy efficiency investment projects

In connection with the recently announced European Green Deal, which is the plan to make the EU's economy sustainable, energy-efficiency investment projects are indeed one of the measures to be adopted in the EU member states to achieve this goal.

A large record of previous experiences is available, both at international and EU level, but also in the region of Navarra (hosting the SustainAVility project) such as Efidistrict project (see Section 3.5).

### 9.1 General guidelines

The following measures are suggested to set innovative financial plans and deploy energy efficiency investment projects:

 **Commitment of Public Administration** to reduce energy consumption in its area.

In order to reach a large amount of energy-efficiency projects, we consider that the public administration should steer and systematise the process since the beginning. This would be ideally deployed by **establishing a plan**, including a time framework and quantified impact targets. If public support is not strong, some energy-efficiency projects may indeed be performed, but others suffering financing barriers may not, therefore reaching a more limited impact.

The Energy Plan of Navarra 2030 (PEN 2030) has the general objective that all the energy supplies for the generation of electricity and heat and their use in industry and transport have a renewable origin in 2050, thus meaning a GHG zero-emission scenario in 2050. The plan includes a set of specific objectives and indicators to be reached by 2020, 2025 and 2030.

Moreover, the plan envisages its coordination with all other regional strategy policies, including the development of a new Regional Law against Climate Change and Energy Transition, which is under its final stages of development with expected parliamentary approval in 2021. A regional decree will also soon establish the new Energy Agency of Navarra (ATENA) to respond to the needs of energy transition of Navarra. Moreover, the Climate Change Agency of Navarra (OCCN), the regional Climate Fund and the Carbon Budget will be created, all of which as instruments and co-financing mechanisms to promote, among other issues, energy efficiency, energy transition and climate change projects in the region.

 **Information, Benchmarking and Networking.**

When setting the plan, EU level, national and regional policies and strategies should be appraised. Moreover, the plans set in other regions and other countries should be investigated. Finally, the results of previous conventional and innovative projects, including their financing strategies should be reviewed, so as to identify success cases and unsuccessful stories. This should be done with the help of networking activities, including communication with local, regional and national energy agencies, institutes and research

centres, financial entities and associations, as well as other governments and public authorities.

✧ **Communication and discussion with regional stakeholders.**

The energy efficiency plan should be discussed with the main actors in the region involved in the energy efficiency measures (municipalities, construction associations and companies, homeowners' associations, industries and industrial associations, etc, including financial institutions) since the early stages, in order to obtain a high degree of implication. This will pool the capacity of the different actors of the region to work together and co-construct the necessary solutions and the acceptability of the innovations in regard to the different contexts.

✧ **Identification of measures requiring deployment of tailored financial schemes.**

Innovative or ad-hoc financial measures should be established for any measure of the energy efficiency plan requiring it in order to meet the objectives. The previous information, benchmarking and networking activities will help in this process.

✧ **Establishment of measures (financial and non-financial) to attain the targeted investments.**

This includes legislating necessary regulations, as well as establishing the framework measures to achieve the impacts and enabling a multiplying replication effect. They should address issues such as energy poverty, bringing about consumer empowerment and resilience and improving security of energy supply.

✧ **Monitoring of the plan.**

A regular follow-up of the plan should be established to identify deviations to the targets set and help reduce them by means of corrective actions.

## 9.2 Innovative measures & financing solutions applied in SustaiNAVility

The following innovative measures and financing mechanisms have been applied in SustaiNAVility project:

✧ **Funding for public administrations and non-profit entities.**


Grants for municipalities and non-profit entities have been provided by GNAV in order to make local administrations the initial example of the energy efficiency investments that all the citizens and private entities need to do in the region. The energy efficiency investments funded with this support in more than 150 municipalities of the region, as well as in about 15 facilities belonging to GNAV, are raising awareness on the need of energy efficiency among citizens, companies and other private entities throughout the whole region.

✧ **Funding to participative projects.**

SustaiNAVility has meant the launching of public support in Navarra to renewable energy co-operative projects. Due to the fact that electricity self-consumption was authorised in Spain shortly before the beginning of the project, SustaiNAVility has become the project to kick-start the promotion of this type of projects by the energy department of GNAV. These pioneering projects have materialised in the Garés Energía participative project in the municipality of Puente la Reina / Garés, as well as the Navarra Arena participative project in Pamplona.

✧ **Building aggregation – Global intervention plans.**

Aggregation of energy efficiency investments in buildings has been specifically enhanced in SustainAVility project. Global intervention plans consist of a group of several similar type of buildings of a neighbourhood that join together to define a unique design of refurbishment project, to be agreed upon all the homeowners' associations of such buildings, and then executed in a similar way. This aggregation requires added efforts to join an obtain commitment of a larger amount of citizens carried out by NASUVINSA, and they benefit from a more efficient and coordinated refurbishment of the buildings. In order to promote this way of doing, energy efficiency investments carried out by means of Global intervention plans have been awarded an additional 10% of funding by GNAV (50% of funding), with an increase of 1,500 € of the maximum grant (up to 7,500 €).

 **Energy efficiency services for industry.**

SustainAVility project has provided a tailored service to the industries of Navarra, helping them identifying their energy savings potential and designing the appropriate investments to achieve them. AIN has provided an enhanced service, financed by the project, starting from a communication campaign, continuing with an individualised energy consultancy support and ending with the follow up and monitoring of the projects after the investments.

## 10 References

### Documents:

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- Draft .Regional Law against Climate Change and Energy Transition  
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## **ANNEX I - List of Project Development Assistance (PDA) projects**





NAVARRA, A REGION SUPPORTING THE SUSTAINABLE ENERGY

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## PARTNERS

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