



# ROADMAP

for innovative energy financing in the European Union  
and the Eastern Neighbourhood

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### Authors



Andreas Karner, Dr. Vanessa Boas, Cosmin Capra

ConPlusUltra GmbH, Austria



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## Preface

### About this Roadmap

Currently, a combination of regulatory mechanisms and incentive schemes are used to trigger energy efficiency and renewable energy development in the private sector across Europe. Still, progress is slow and although energy efficiency and renewable energy projects offer a range of financial and non-financial advantages both for public and private actors, little is done to exceed minimum legal requirements. The main barriers for the realization of private sector financed energy efficiency projects relate to the development and implementation of complex energy projects, on the one hand, and to the access for funds for financing innovative sustainable energy projects, on the other.

**The roadmap is a guiding document for European stakeholders and decision-makers in the sustainable energy and financing sectors. It builds upon the current developments in the EU policy framework within the timeframe of 2030.**

The document is structured along the following sections:

1. What is energy efficiency and why does it matter?
2. What are the EU's climate ambitious?
3. How can energy efficiency be financed?
4. What is the role of innovative financing mechanisms?
5. What barriers still stand in the way of energy efficiency projects and finance?
6. Key actors in the implementation
7. What can be done to render energy efficiency investments more attractive?
8. What opportunities are there related to energy efficiency?
9. A vision for Europe to 2030 related to innovative financing for energy efficiency
10. E-FIX Recommendations to key European stakeholders
11. The contribution of the E-FIX project

It is based on insight acquired throughout the E-FIX project, referring to outcomes from pilot initiatives and financing campaigns realized in Armenia, Austria, Croatia, the Czech Republic, Georgia and Poland as well as from a range of analyses and stakeholder consultations. Given that innovative financing mechanisms for energy efficiency is a relatively new topic, the roadmap contains information that might be unknown to some stakeholders and therefore presents a true added value.



## About E-FIX Project

The overall objective of the E-FIX project is to prepare the European market – with a focus on the countries of various EU enlargement rounds as well as the markets of countries, which have recently reached EU association status – for the intensified usage of innovative financing mechanisms in the energy sector in order to facilitate the increase of investments in energy projects and services.

The underlying approach considered by this project funded by the Horizon 2020 programme is that an innovative Energy Financing mix (E-FIX) is needed in order to access new sources of finance and facilitate an increased implementation of sustainable energy projects. The E-FIX project was developed to trigger private investments using a mix of innovative financing mechanisms, to be specific: credit lines for energy performance contracting, crowdfunding models and leasing models for energy efficiency and renewable energy projects.

## 1. What is energy efficiency and why does it matter?

Energy efficiency (EE) refers to the process of using less energy to perform a given task, and thereby reducing the amount of energy being wasted. What appears to be a small action can have a large effect: energy efficiency can reduce greenhouse gas emissions, limit the demand for energy imports and lower the costs of operation in a business, public entity or household. While renewable energy also supports these objectives, rolling-out energy efficiency allows for a cheaper and more immediate way of tackling our reliance on fossil fuels.

Energy efficiency is a key pillar of the EU's long-term strategic vision for a prosperous, modern, competitive and climate-neutral economy. It addresses the combined potential of increasing competitiveness of businesses and industries, enhancing energy security and abating greenhouse gas emissions. With structurally higher energy prices in Europe, EU firms have been facing growing incentives to invest in EE measures to control energy costs and remain competitive in a globalized business environment. Energy costs can affect firms' investment decisions and their financial performance in a number of ways given that energy serves as one of the key inputs to production processes of goods and services.

The potentials for EE savings are huge: every sector of the economy can benefit from EE measures be it through buildings, transportation, industry production, services or energy generation. For example, in the case of buildings, small steps such as installing LED light bulbs and energy efficient appliances can contribute to reducing energy consumption, whereas larger efforts such as upgrading insulation and weatherization can have a substantial impact on energy usage.

The advantages of EE are not limited to helping the environment: they also benefit one's wallet. EE measures result in lower heating, air conditioning, hot water and lighting bills. Retrofitting buildings can also drastically cut heating and cooling energy requirements. Installing energy efficient equipment (motors, pumps, etc.) in production processes will cut down operational expenses significantly.

**Energy efficiency is thus a topic of major interest for all segments of society – be it individuals, companies or the state – because everyone can gain from EE and also play an active role in supporting national, EU level and international climate targets.**

## 2. What are the EU's climate ambitious?

The EU's climate obligations and targets are made up of a mix of EU-level and international agreements and commitments, determining the course of action at both EU and national level. These are the 2030 targets and the Green Deal on one hand, and the Paris Agreement on the other.

The 2030 climate and energy framework was presented by the European Commission (EC) in 2014 and defines **EU climate and energy policies for the 2020-2030 period**, which is estimated to require a total of €260 billion in additional annual investment.

It aims for:

- At least **40%** of cuts in greenhouse gas emissions (compared to 1990 levels);
- At least a **32%** share for renewable energy (based on the final energy consumption);
- At least a **32.5%** improvement in energy efficiency.

The 40% greenhouse gas target is implemented by the [EU Emissions Trading System](#), the [Effort Sharing Regulation](#) with Member States' emissions reduction targets and the [Land use, land use change and forestry Regulation](#). In this way, all sectors will contribute to the achievement of the 40% target by both reducing emissions and increasing removals.

All three pieces of climate legislation will now be updated with a view to implement the proposed at least 55% net greenhouse gas emissions reduction target. The Commission will come forward with the proposals by July 2021.

At the same time, the EU has ambitions of becoming climate neutral by 2050 through the recent "Green Deal", which requires an adaptation of the above-mentioned targets. For climate neutrality to become a reality, CO<sub>2</sub> emissions will have to be cut to net-zero by 2050 and neutrality for all other greenhouse gases somewhat later in the century<sup>1</sup>. The Green Deal also begs for the revision of a number of climate-related policy instruments at EU level, namely, the Climate Law, the Emissions Trading System etc. While such a review is scheduled to happen by July 2021, the transition to a green economy, as outlined in the Green Deal, will also require additional funds. It is estimated that the European Green Deal Investment Plan will mobilize at least €1 trillion<sup>2</sup> over the course of 10 years, thanks to the combined:

- capital from EU and national budgets;
- public and private investments;
- additional measures to facilitate and boost green public and private investments;
- attractive investment conditions;
- technical assistance to help investors in selecting sustainable projects.

The Green Deal should help contribute to the Paris Agreement of 2015 with which states agreed **to limit the global temperature rise to under 2°C by the end of the century compared to pre-industrial era levels, while aiming for the target of 1.5°C.**

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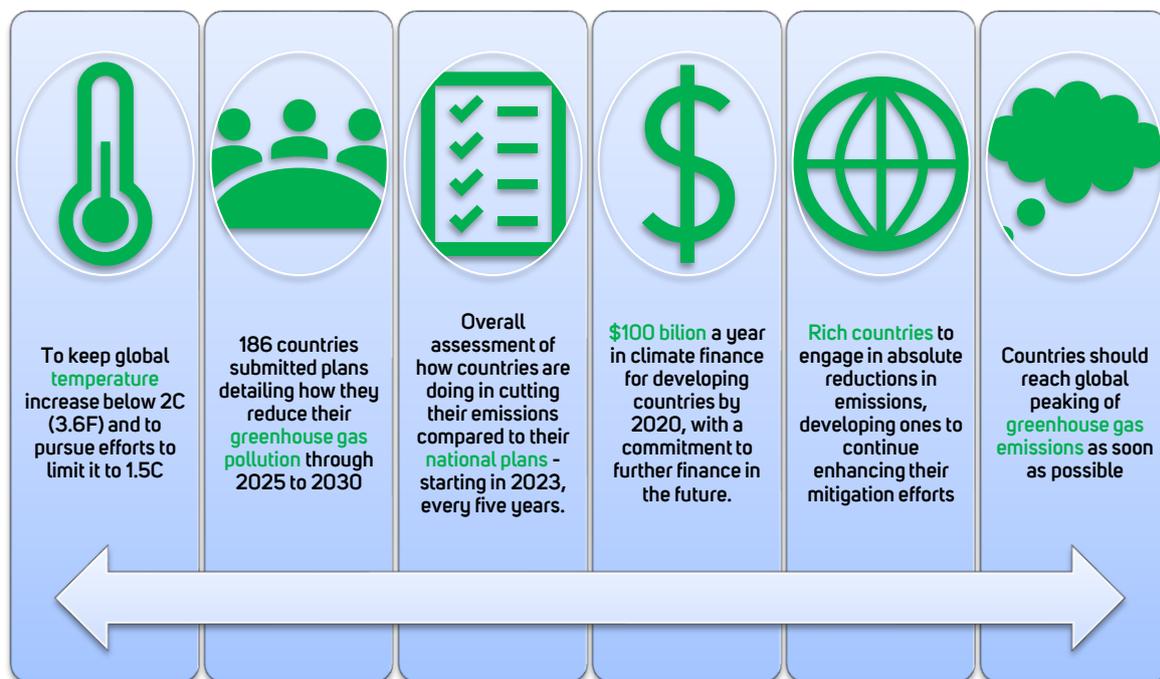
<sup>1</sup> COM(2018) 773: A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy  
<sup>2</sup> [https://ec.europa.eu/info/publications/200114-european-green-deal-investment-plan\\_en](https://ec.europa.eu/info/publications/200114-european-green-deal-investment-plan_en)

The Agreement obliged all signatory countries to present National Climate Contributions that must be regularly updated by making them increasingly ambitious in order to meet the defined long-term target. It also included provisions to facilitate both emissions exchanges and advances in the development of carbon pricing schemes. In general, the Agreement sent a strong message that climate change is a global problem for which all states hold responsibility and must act.

Some of the key points of the agreement are:

**SIX KEY POINTS OF THE PARIS CLIMATE AGREEMENT**

The 31-page document that details a landmark agreement reached in Paris on 12 December 2015 could be a turning point in the struggle to contain global warming. The historic pact, approved by 195 countries, took effect in 2020.



Source: UNEP, Global Trends in Renewable Energy Investment 2015

For the ambitions of the Paris Agreement to be realized, large sums of finance must be mobilized. The Intergovernmental Panel on Climate Change estimates that for the 1.5 degree target to be met, 2.5% of global GDP would have to be invested into the energy system between 2016 and 2035. The International Energy Agency in turn predicts that the energy intensity of the global economy would need to fall by about 66% by 2050 to stay on track and investment in low-carbon technologies and energy efficiency would need to increase six-fold to USD 2.3 trillion by 2035. **It is clear that strong EE regulations and laws must be in place at EU level for EE to gain ground in the European Union for this target to be met.**

## Which legal framework is in place to help achieve the targets?

At the very centre of this topic is the new amending **Energy Efficiency Directive (2018/2002)**, which provides the policy framework up to 2030, setting the energy efficiency target of at least 32.5%. 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. With the amended **Energy Performance in Buildings Directive (2018/844/EU)** a highly energy efficient and decarbonized building stock shall be achieved by 2050. This is reinforced by a renovation wave strategy (2020), which was presented by the Commission as part of the Green Deal and constitutes an action plan with concrete regulatory, financing and enabling measures to boost building renovation.

One important point is that Member States are required to draw up integrated 10-year **National Energy & Climate Plans (NECPs)** under the Governance Regulation 2018/1999, outlining how they intend to meet the energy efficiency target and the other targets by 2030.

Beyond the EU, the European Union is equally striving to promote energy efficiency in Armenia and Georgia, two Eastern Partnership countries. In Armenia, energy savings and energy efficiency are being fostered through the *Partnership and Cooperation Agreement* between the EU and Armenia, which allows for the financing of various projects. In Georgia, the foreseen adaptation is greater through the transposition of EU EE legislation, which flows from the *Association Agreement*.

**While having the right laws in place is key to achieving the EU's targets, access to finance and the existence of varied financing instruments form another pillar for energy efficiency investments. The EU addresses the financing topic in its EU Action Plan "Financing Sustainable Growth".**

According to the EC, implementing the goals of the Paris Agreement and the EU's sustainable development agenda will require around €180 billion of additional investment a year. As the financial sector plays a key role in this, the EC published an action plan on sustainable finance entitled: **"Financing Sustainable Growth"** in March 2018, thus launching a comprehensive strategy for sustainable finance.

The action plan has three objectives:

1. *Reorient capital flows towards sustainable investment to achieve sustainable and inclusive growth.*
2. *Addressing financial risks arising from climate change, natural disasters, environmental degradation and social problems.*
3. *Promote transparency and long-termism in financial and economic activity.*

The European supervisory authorities are involved in the implementation of the action plan in order to contribute to a harmonized application of EU regulations on sustainability. In addition, a platform for sustainable financing is to facilitate the exchange between experts, private actors and public authorities. In the future, the platform is to function as an advisory body to the EC.

## The EU "Green Finance" Legislative Package

In implementation of the Action Plan, the EC adopted a "Green Finance" legislative package in May 2018. On the one hand, this consists of the three regulations described below and, on the other hand, amends two delegated acts on insurance intermediaries and investment firms to ensure better customer advice on sustainability aspects.

1. EU Regulation establishing a framework to promote sustainable financing (Single EU Classification System or "Taxonomy", Regulation (EU) 2020/852).

This sets out six environmental objectives (climate change mitigation, climate change adaptation, water, circular economy, pollution, ecosystems) that guide whether an economic activity is sustainable for the sole purpose of determining the degree of sustainability of an investment. In addition to making a substantial contribution to one of these environmental goals, no other environmental goal may be violated at the same time ("do no significant harm" principle) and minimum social standards must be met. This regulation is currently being negotiated between the European Council and the European Parliament.

2. EU Regulation on disclosure requirements on sustainable investments and sustainability risks for institutional investors (Regulation (EU) 2019/2088).

This regulation lays down transparency requirements for financial participants and investment advisors with regard to the consideration of sustainability risks as well as negative impacts of investment decisions or advisory processes on sustainability factors. In addition, specific disclosure requirements for sustainable investments are defined. This should make it easier for investors to include sustainability aspects in their investment decisions.

3. Sustainable finance and EU taxonomy

The European Commission published the sustainable finance package on 21 April 2021, which, in addition to the delegated acts on the two regulations, also includes a proposal for an amendment to the directive on non-financial reporting by companies.

4. EU regulation on sustainable benchmarks

Two new categories of sustainable benchmarks are defined:

- o "EU climate change-related benchmarks" and
- o "EU benchmarks aligned with the Paris Agreement".

These new reference value categories are intended to serve as an orientation for investors, helping avoid "green washing" and fostering investments in sustainable projects and assets. Based on the work of the Technical Expert Group, the EC will determine in a delegated act how the selection of companies for the benchmarks is to be carried out.

### 3. How can energy efficiency be financed?

It is evident that large sources of finance must be mobilized for both the EU level and international targets to be met. Numerous barriers currently limit access to finance, among them the borrowing costs, which are relatively high in comparison to the expected cash inflows (or cost savings), resulting in long payback periods for EE investments. Moreover, there is substantial untapped potential in both the private and the public sector, which has to be unleashed. Potential sources include institutional investors (pension funds, insurance companies, endowments, sovereign wealth funds) and community-based finance. There are also several innovative financing mechanisms, which are not being used on a wide scale, despite the benefits they can offer.

In general, the energy financing framework currently in place can be split according to these categories:

1. **European funds, banks and assistance**
2. **National public financing sources**
3. **Financial intermediaries**
4. **Private sector funding**

The key instruments that fall below the category of “**European funds, banks and assistance**” are:

- As part of the European Green Deal Investment Plan, the Commission has proposed the establishment of a *Just Transition Mechanism* including a new Just Transition Fund. The facility will be implemented with the involvement of the European Investment Bank and will encourage investments that support the transition towards a climate-neutral economy by public sector authorities to the benefit of coal- and carbon-intensive regions. The facility will include €1.5 billion in grants from the EU budget and up to €10 billion in loans from the European Investment Bank's own sources. The facility will mobilize up to €25 - €30 billion of investments for those territories and regions most affected by the transition to a climate-neutral economy, prioritizing those that have a lower capacity to deal with the costs of the transition.
- The *Smart Finance for Smart Buildings (SFSB) Initiative*. This forms part of the 'Clean Energy for All Europeans' package and includes practical solutions to mobilize private financing for energy efficiency and renewable energy in buildings. SFSB also supports the use of Energy Performance Contracts (EPCs) in the public sector. These 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 saving.
- *H2020 Project Development Assistance (PDA)* 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.
- *ELENA Fund*: **ELENA** (European Local Energy Assistance) supports private and public promoters to develop and launch large-scale bankable sustainable energy investments (above € 30 million), including in sustainable transport. ELENA is a joint initiative by the European Investment Bank and the European Commission under the Horizon 2020 programme. It covers up to 90% of project development costs.
- The *De-risking Energy Efficiency Platform (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.

- *InvestEU*: The InvestEU Programme will bring the multitude of EU financial instruments currently available under one roof and expand the successful model of the Investment Plan for Europe, the Juncker Plan. With InvestEU, the Commission will further boost investment, innovation and job creation, triggering at least €650 billion in additional investment. Financing projects in sustainable energy, digital connectivity, transport, circular economy, water, waste and other environment infrastructure and more.
- *NextGenEU*: An emergency Next Generation EU instrument of €750 billion to temporarily boost the financial firepower of the EU budget with funds raised on the financial markets. The funds raised will be channelled through EU programmes to underpin the immediate measures needed to protect livelihoods, get the economy back on its feet and foster sustainable and resilient growth.
- *EEA and Norway Grants*: these aim to contribute to less carbon intensive energy use in Europe and increased security of supply. The Grants support a wide range of activities, such as:
  - Energy efficiency measures in industry
  - Production of renewable energy, including geothermal energy for multipurpose use
  - Energy saving measures in households
  - Energy storage from multiple energy sources
  - Improved energy security through diversification

The target countries are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal Romania, Slovakia, and Slovenia.

- *European Structural and Investment Funds*: these are in line with the objectives of the Europe 2020 strategy (under development).
- *Modernization Fund*: the Fund is a dedicated funding programme to support 10 lower-income EU Member States in their transition to climate neutrality by helping modernise their energy systems and improve energy efficiency. The beneficiary Member States are Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia.

In terms of “**National public financing sources**”, there are different instruments across the EU Member States and the Eastern Partnership countries involved in E-FIX, including:

- **Austria**: The Climate and Energy Fund (state funded), the Federal Environmental Funding Programme, and other federal programmes supporting e.g. “Climate and Energy Model Regions”, and “klimaaktiv” the Austrian climate protection initiative and integral part of the Austrian climate strategy focusing on high standards of quality, capacity building and training of professionals, advice and service provision for different sectors (e.g. buildings, industry and processes, mobility, renewables), and the recently launched Green Finance programme to support green projects with business plan development and crowdfunding and green bonds emissions.
- **Croatia**: The Environmental Protection and Energy Efficiency Fund, Ministry of Regional Development and European Funds is the managing authority in charge of Operational Programmes for ESIF.

- **Czech Republic:** EFEKT Programme, Operational Programmes of ERDF, National Environmental Programme.
- **Poland:** The National Fund for Environmental Protection and Water Management is a state legal entity that finances environmental protection and water management to the extent specified in the act.  
The Infrastructure and Environment Programme is a national programme supporting the low-carbon economy, environmental protection, counteracting and adapting to climate change, transport and energy security.  
*There are decentralised regional operative programmes financed by the European Regional Development Fund and the European Social Fund. One of these is implemented in the voivodeship. The programme was developed on the basis of the legislative package for the cohesion policy presented by the European Commission and European and national documents of a strategic nature.*
- **Georgia:** The Georgian Energy Development Fund is a 100% state owned company founded by Ministry of Economy and Sustainable Development of Georgia. The mission of “Georgian Energy Development Fund” is to promote the realization of the country’s energy potential, retrieval of appropriate funds, by developing projects and their effective implementation.
- **Armenia:** The Armenian Renewable Resources and Energy Efficiency Fund (R2E2) started its operation in 2006. It was established by the Government of Armenia as an independent NGO following the provisions of the “Law on Energy Efficiency and Renewable Energy” of Armenia. The mission of the Fund is to facilitate investments in energy efficiency and renewable energy in Armenia.

With regard to “financial intermediaries”, there are financial institutions and banks, which provide loans, bonds and project finance.

Green loans and bonds are earmarked to raise money for climate and environmental projects, including energy efficiency. In addition, sustainability funds exist, which invest in companies that adhere to the principle of sustainability. Some sustainability funds are directly guided by the SDGs and can also be used to finance energy efficiency projects.<sup>3</sup> An important role is dedicated to green funds and financing facilities developed by (multilateral) development banks, such as the

- Green for Growth Fund Southeast Europe, the German Kreditanstalt für Wiederaufbau (KfW) funding through Energy Efficiency for SME Programme, and the
- European Bank for Reconstruction and Development’s (EBRD) Green Economy Financing Facility (GEFF<sup>4</sup>) offering technical assistance and financing through local PFIs in several CEE countries, such as Croatia, Poland, Armenia and Georgia.

<sup>3</sup> To cite two examples: Sustainability Fund in Austria: [https://www.lgt.at/de/private-banking/anlageprodukte/nachhaltige-anlagen/?gclid=EAlalQobChMIJJDz1oQa6gIVxlGyCh21YQ9JEAAYASAAEgI1h\\_D\\_BwE#button2](https://www.lgt.at/de/private-banking/anlageprodukte/nachhaltige-anlagen/?gclid=EAlalQobChMIJJDz1oQa6gIVxlGyCh21YQ9JEAAYASAAEgI1h_D_BwE#button2) and Sustainability Fund with SDG criteria: <https://sdg-invest.com/financial-selection/>

<sup>4</sup> <https://ebrdgeff.com/>



**“Private sources”** for energy efficiency financing are the following:

1. Energy efficiency loans (usually unsecured loans, similar to personal loans or lines of credit to be taken out from a creditor).
2. Energy-efficient mortgages (energy efficiency has a risk mitigation effect for banks as a result of its impact on a borrower’s ability to service their loan and on the value of the property)
3. On-bill financing (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).

## 4. What is the role of innovative financing mechanisms?

Innovative financing mechanisms will partly determine whether the EU meets its energy and climate targets since traditional instruments are insufficient for the mobilizing of the amounts of finance required for the implementation of the Green Deal. At present, a range of innovative financing instruments exist, which are still being explored on the market and have vast potential for up-scaling and replication.

**E-FIX has focused on three instruments in particular with the purpose of examining their roll-out potential in the European Union and the Eastern Neighbourhood:**

### a) Crowdfunding

Crowdfunding has been gaining importance in recent years. With this financing option many people collectively participate in the funding of companies or implementation of projects by contributing small amounts of money. The collection of these funds is usually conducted through platforms on which the operators, projects and companies publish open calls for financing. Such a financing call usually consists of a minimum funding threshold (= minimum amount that allows for the funds to go through) and a funding limit (= maximum funding requirement; no further offers accepted beyond this limit) as well as a maximum participation amount per investor.

Pitching a project or business idea through an online platform can be a **valuable form of marketing** and result in media attention. Entrepreneurs and project initiators may not only use this form of financing to collect the funds necessary for their company/project, but also to sell a project to a loyal community.

The most important tool for the reduction of investment risk is therefore sufficient diversification from the investor's viewpoint, i.e. a distribution of funds earmarked for crowdfunding to different levels of companies or projects. Specific laws for the Crowdfunding sector have been enacted in several EU countries (including e.g. Austria) where companies and platforms have seen strong and steady growth over the last years.

A clear distinction is to be made between "crowdfunding" und "crowdinvesting", since some overlaps occur and it is possible to run diverse types of "funding" initiatives where the capital required is provided by a large group of sponsors (the "crowd"). While "crowdfunding" refers to the practice of funding a project or venture by raising money from a large number of people who each contribute a relatively small amount without the primary goal of a reward, "crowdinvesting" usually refers to equity-based and lending-based crowdfunding where monetary returns are a primary motivation for the investment. The operational transparency, legal certainty, secures and reliable handling of payments and data protection are also a success factor for the numerous platforms as well as the ease of use.

Within E-FIX, donation- or reward-based crowdfunding campaigns have been supported in Croatia and Czech Republic respectively, and crowdinvesting mechanisms with financial returns for sustainable energy projects (energy efficiency, renewable energy) have been targeted in Austria – although with limited success for energy efficiency projects due to the relatively high costs compared to traditional financing/funding means available for setting up campaigns, internet presence, legal provisions, costs of payment providers for online payments etc.



## b) Leasing

A lease is a simple financing structure that allows a customer to use energy efficiency, renewable energy, or other generation equipment without purchasing it outright. The two most common types are on-balance sheet capital leases and off-balance sheet operating leases. Leasing refers to a contractual agreement between a lessee and a lessor. The agreement establishes that the lessee has the right to use an asset. In return, the lessee makes periodic payments to the lessor, the owner of the asset. At the end of the lease, the customer may have the option of purchasing the equipment, returning the equipment, or extending the contract, depending on the type of lease used. Lease financing is offered by many equipment manufacturers and vendors as well as third-party lessors.

The specific leasing product developed under E-FIX is the so-called “eLeasing”, supporting local businesses to identify and finance possible energy efficiency projects and equipment within the company activities. With this product, local companies are able to access an affordable financing mechanism, receive qualified technical assistance, as well as benefitting from modern technologies and product quality. On the other hand, the involved leasing company minimizes the technology risk by investing in modern equipment and increasing its portfolio liquidity.

The model has been developed and tested by major Leasing companies in Armenia and Georgia, both being project partners within E-FIX. Common leasing technologies that have been considered for eLeasing are: (i) Construction machinery and equipment; (ii) Agriculture machinery; (iii) Road construction equipment; (iv) Mobile production lines; (v) Transportation equipment; and (vi) Renewable energy technologies.

## c) Energy Performance Contracting

Energy Performance Contracting (EPC) is a financial mechanism, which is experiencing growing popularity, mainly within the public sector. The main advantage of EPC over debt financing is that an external organization (Energy Service Company –ESCO) finances and implements an energy efficiency project for the client and then uses parts of the stream of income from the energy savings achieved by the client to repay the cost of the project.

The beneficiary is thus not required to provide funds for the investments prior to its completion and the remuneration of the contractor is paid from the savings generated by the investment (based on a performance guarantee given by the ESCO, which transfers the technical risks from the client to the ESCO). This factor results in several important incentives especially for public entities. Firstly, no initial cash outflow is needed (in case the project is implemented fully by an external contractor) or the initial cash outflow is significantly reduced (in case the project is implemented by a “Special Purpose Vehicle”/SPV formed with the contractor). Secondly, an EPC formula results in no (or limited) increase in debt ratios (which may allow the beneficiary to obtain debt for other issues, or to implement the project without breaching specified indebtedness criteria in case the beneficiary is obliged to meet any).

However, the problem of financing of the investment does not disappear but it is transferred to the contractor’s side. As a result, only EPC contractors being part of large capital groups are capable of the realization of several EPC projects simultaneously. Smaller local contractors also often do face problems

in the provision of the necessary financing levels, especially when they are already engaged in other projects.

Nonetheless, the EPC formula seems to have vast potential to enhance realization of EE & RE projects across Europe and the European Neighbourhood as it tackles major problems discouraging potential beneficiaries from project implementation.

EPC contracting has been tested within E-FIX to be a viable financial mechanism with a significant impact on the level of energy efficiency experienced in Poland and also Croatia.

**In addition, there are also other innovative financing instruments (not being considered within E-FIX):**

**a) Green Bonds**

Green bonds play an increasingly important role in financing assets needed for the low-carbon transition. However, there is no uniform green bond standard within the EU. Establishing such a standard was a recommendation in the final report of the Commission's High-Level Expert Group on sustainable finances<sup>5</sup>.

Green Bonds are issued by entities who want to undertake projects that have a positive environmental and/or climate impact. Bonds provide the bond issuer (borrower) with external funds to finance long-term investments and the bond-holder (lender) with a return on investment. In order to issue a bond, the future issuer has to identify a project and define the use of the proceeds for tracking and reporting.

**b) Soft Loans**

Soft loans are loans with no interest or below-market rate of interest. They may also have lenient terms, such as extended grace periods, in which only interest or service charges are due, or interest holidays. Soft loans are often used by states, regions or local authorities to encourage investment supporting energy policies. They are often complementary to subsidies of fiscal incentives. Soft loans are particularly suitable for citizens wishing to carry out energy renovation works in their homes, and therefore offer a great potential for energy savings.

Soft loans finance energy efficiency measures and are paid back with the cash flow generated through energy savings over time. As the loans return to the fund, they become available for investment in other projects again.

**c) Revolving Funds**

Public Revolving Funds are instruments set up by a public body to disburse soft loans. This is an option for entities that have the budget (which can also be accumulated over several years) to set up an initial fund, as well as the budget to pay a fund manager or a commercial bank to manage the dedicated fund. The revolving fund is a reserve of money used to finance a particular set of activities by lending to one or more borrowers. Over a given period of time, the borrower is expected to repay the original sum that

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<sup>5</sup> [https://ec.europa.eu/info/sites/default/files/180131-sustainable-finance-final-report\\_en.pdf](https://ec.europa.eu/info/sites/default/files/180131-sustainable-finance-final-report_en.pdf)

restocks the fund. Usually, an interest is charged to the borrower as a fee for administrative costs but also to protect the fund from being depleted.

This approach is beneficial for energy efficiency projects as a means of overcoming barriers such as limited access to finance. Such funds can help pool funding from governments and different international financial institutions to maximize impact. Then, once the energy cost savings have been reaped, the investment can be repaid. The 'Bulgarian Energy Efficiency and Renewable Sources Fund – EERSF' is an example of this mechanism, under the form of an independent legal entity (it operates as a public private partnership) established in 2005. It got initial funding from the Global Environment Fund (GEF) through the World Bank's International Bank of Reconstruction and Development (IBRD), from the Government of Bulgaria, the Government of Austria and from the Bulgarian private sector. It aims at providing revolving project finance and technical assistance for public (municipalities, universities, hospitals) and private sector (businesses and residential) energy efficiency projects in Bulgaria. Since 2011 the Fund also provides funding to demand-side off-grid RES production projects.<sup>6</sup>

#### **d) On-Tax Financing**

On-tax financing is a type of financing mechanism used to collect the repayment for money that was lent for investments in building improvements that meet a 'valid public purpose', e. g. save or produce energy. Typically, investors lend money for deep retrofits up-front and then get repaid regularly through an additional charge on a tax bill. EuroPACE is a form of on-tax financing and it builds upon an existing relationship that municipalities have with their citizens – the property tax system.

EuroPACE is inspired by the success of the on-tax financing model called PACE, launched in California in 2008. In the US, the PACE market has reached over \$4.7 billion in funded projects over the past years, including the retrofit of over 200,000 homes, which resulted in more than 42,000 new local jobs and the creation of hundreds of new companies.

PACE can be used to pay for energy efficiency, renewable energy, and water conservation upgrades to homes and buildings. PACE financing covers up to 100% of a project's costs and is repaid as a special assessment added to a property tax bill over a term of up to 20 years. EuroPACE adopts best practices from the US PACE market and intends to further enhance its reach, scope, and overall impact well beyond the American experience.

#### **e) Local Energy Cooperatives**

Energy cooperatives offer citizens the possibility of participating in energy efficiency projects. After obtaining a cooperative share and becoming co-owners, members share the profit generated and have the opportunity to democratically control an enterprise that works on energy efficiency or renewable energy projects and offers them e. g. to buy the produced electricity at a fair price. Through the 'Clean energy for all Europeans' package, the EU has introduced the concept of energy communities in its legislation, notably as citizen energy communities (CEC) and renewable energy communities (REC).

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<sup>6</sup> <http://cityinvest.eu/content/bulgarian-energy-efficiency-and-renewable-sources-fund-eersf>



Empowering renewable energy communities to produce, consume, store and sell renewable energy is expected to help advance energy efficiency in households, support the use of renewable energy and at the same time contribute to fighting poverty through reduced energy consumption and lower supply tariffs. There are several such communities already in place, such as PajoPower / Klimaatpunt (BE) and Energy Communities Tipperary Cooperative (IE).<sup>7</sup> It is worth noting that following the EU's Clean Energy for All Europeans legislative package, EU Member States are currently working on transposing the definitions of Renewable Energy Communities and Citizen Energy Communities into their national laws, which will further strengthen their presence.

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<sup>7</sup> Citizen-led renovation - REScoop <https://www.rescoop.eu/citizen-led-renovation>

## 5. What barriers still stand in the way of energy efficiency projects and finance?

Numerous barriers currently exist, which undermine efforts to increase energy efficiency measures and need to be tackled. The barriers listed below reflect the realities encountered by the representatives of the six E-FIX partner countries (Austria, Czech Republic, Poland, Croatia, Armenia and Georgia) and were developed in the framework of country-level gap analyses. While they concentrate on the specific domestic context, they are equally valid for the European Union and the Eastern Partnership region at large given the similarity of barriers encountered on the European continent.

### Legal, political and regulatory barriers:

- In many eyes of public and private decision-makers, energy efficiency is still not a priority, despite the fact that European legislation puts the emphasis on the 'triangle' between renewables, efficiency and decarbonisation. Even in those countries where EE is openly supported, governments, banks and donors often fail to give incentives to undertake energy efficiency investments, preferring to focus on other sectors.
- As regards innovative financing mechanisms, some countries are lacking the proper regulatory frameworks governing alternative financing solutions (e.g. as identified in Croatia or Czech Republic considering crowdfunding). This hampers their development and expansion as such mechanisms are either considered too risky or remain largely unknown.

### Institutional and capacity barriers:

- In general, a lack of awareness among and within organisations can be noted on the topic of "energy efficiency financing". This stems from the fact that there tend to be either finance or energy efficiency experts but few employees provide "cross-cutting competences" covering both areas of expertise. This means that investors fail to receive the advice and guidance needed to successfully support energy efficiency projects.
- The general public also tends to have limited awareness of energy efficiency and the concomitant financing instruments, which are at their disposal. This lack of awareness directly results in a limited demand for alternative financing modalities.
- On the institutional barriers, mostly observed in commercial and residential properties, there is also a split incentive to invest in energy efficiency, whereby the tenant benefits from energy savings, whereas the landlord makes the investment.
- Individual energy efficiency projects tend to be small in size, which often makes it difficult to attract larger investors since they often do not meet the minimum investment thresholds for financial institutions. In Poland and Croatia, this is considered a major barrier in the public sector, but it is a general observation valid for mainly smaller municipalities or cities elsewhere where infrastructure is often limited in size and/or dispersed.
- On another issue, larger projects are more complex to develop and manage, which is often the case for substantial building modernization or industrial energy efficiency projects. The

combination of complexity, size and implementation capacity do often result in poorly setup or managed projects that are not well structured and therefore may not cover all prerequisites needed to attract investors and/or financial providers.

### **Economic and Social barriers:**

- Generally speaking, energy prices continue to be very low (especially for fossil fuels, as a result of heavy governmental subsidies) or with the potential to rise only slowly over time, which renders investing in costly energy efficiency measures rather unattractive. It is often cheaper to continue using old or second-hand, inefficient equipment in such cases rather than investing in state-of-the-art, energy efficient devices or technologies. For a specific segment of low-income population this might be of advantage, but this means that these population segments frequently stick to utilizing highly inefficient equipment and do not have the funds to invest in more efficient equipment.
- In another context, creditworthiness of potential beneficiaries (e.g. residential, housing cooperatives, municipalities, small businesses) is an issue and has been identified as a major barrier particularly in Poland, Armenia and Georgia. This situation is expected to worsen due to the corona pandemic and will influence the likelihood of looking for money-saving measures rather than planning for new investments. Together with the low awareness level of decision-makers in public authorities and businesses the application of innovative financing mechanisms will likely remain at a low level.

### **Financial barriers:**

- In the public sector, reliance on transfers from other levels of government also exposes municipalities to the risk that permitted levels and uses of funds may be affected by changes in national budgetary or political priorities. This introduces further uncertainties and makes commitment to multi-year programmes of capital expenditures more difficult. These restrictions may take the form of limits on the use of loan funds and/or on the total amount that municipalities may borrow. In both cases, EE projects are likely to lose out, because they are not typical capital expenditure projects that can be readily assessed and approved by higher authorities. In addition, when debt ceilings are in place, EE projects, with relatively low public profiles, are likely to have a lower priority than other pressing or mandated needs.
- Experiences from E-FIX show that mainly the public sector (municipalities, regional authorities) can usually rely on a variety of 'traditional' financing sources, largely commercial bank loans and public funds (zero-interest loans, grants), but does have limited access and capacity to introduce innovative financing sources like ESCO-based approaches, leasing, energy performance contracting, and/or crowdfunding/crowdfunding mechanisms. This is especially the case in Austria and Croatia, and probably likely in other countries.
- In the private sector, costs of financing and resulting priorities to use equity over debt financing are major issues influencing the decisions of investors. The main decisive factors are the level of collaterals reflecting the perceived risks of lenders, as well as favourable interest rates. In countries like Armenia and Georgia, commercial financing conditions are often unfavourable,

unless blended with cheaper funds (e.g. from dedicated credit lines offered by development banks or funds).

- Furthermore, standardization in the development and documentation of projects can be weak, representing a barrier for achieving scale; project development and due diligence costs therefore tend to increase relative to investment size. Furthermore, for energy efficiency, the benefits are in the form of savings rather than revenues, making it harder to secure cash flows compared to energy supply projects.

#### Technical barriers:

- Savings can be hard to measure due to the difficulties of metering and the influence of variables such as weather and changes of patterns of use. Appropriate energy monitoring equipment and energy performance indicators are required to evaluate savings, which are not always readily available. In other cases, the end user lacks the knowledge and capacity to identify, develop, and implement energy efficiency projects.
- Even when technological barriers to implementing energy efficiency projects are low, the perception of risk is often much higher among consumers and financial agents due to the specialized nature of the engineering and the fear of disruptions to normal operations during the retrofit project process.

## 6. Key actors in the implementation

Apart from the European Union and its Member States, there are a number of other actors who will play a key role in reaching of the objectives outlined in this roadmap. These actors are governments, industry, banks and financial institutions as well as civil society organizations and private individuals.

### Governments

The governments of the EU Member States and the Eastern Partnership countries (27+6) are the principal driving force behind the passing of legislation and are able to push for harmonization of policies across the European Union. At the EU level, this policy-shaping process will chiefly take place in the EU institutions and during bilateral cooperation meetings with the Neighbourhood countries. At the national level, but also on regional (provincial) and local level governmental authorities can shape the behaviour of other actors in the energy efficiency ecosystem, encouraging them to adopt certain measures or support certain actions with the end of promoting energy efficiency and its financing through innovative mechanisms. It is worth noting that at regional level, Energy Cities and Smart Cities play an increasingly important role in bringing about change in this sector and lead on relevant actions. In general, such actions are defined and set up in the country-level energy efficiency Action Plans and regional energy concepts, which describe the planned implementation of individual measures to achieve the key indicators by 2030.

### Industry and SME

Changes in production regimes can have a radical impact on energy consumption levels across industries and businesses within the European Union. Industrial players and moreover SMEs that often lack human and financial capacity and resources have to be incentivized to implement energy efficiency measures and access appropriate funding and financing means. Additional technical assistance in the form of energy audits and specific assessments are required (and meanwhile provisioned by law across Europe) to prepare the ground for EE investments, however, these projects are only considered if economic conditions are sound. Equity financing is still mostly the preferred option for larger businesses and industries who do not lack liquidity, while in the case of SMEs and micro-businesses, there is huge demand for providing an appropriate mix of different financing sources (traditional and innovative).

Producers and suppliers of highly energy efficient equipment will increase their market shares and expect a boost in the market, as a consequence of circularity and eco-design principles becoming legally binding. Blended financing mechanisms for suppliers to increase their competitiveness and reduce costs for their customers will evolve.

### Utilities

EE and RES investments made by utilities in regard to their production and distribution assets may lower the cost of production and distribution losses without affecting the sales volume. At the same time, energy supply and demand behaviour change due to distributed energy regimes, which forces utilities to increase their customer relationship through integrated energy services. Sensitized utilities need to promote energy efficiency as an energy resource as they do with the new renewable energy sources solar, wind, hydro or biomass. Helping utility customers improve the efficiency of their businesses,

facilities and homes is a great way for utilities to help manage demand during peak hours. If a utility can make it easier for customers to e.g. use high-efficiency air conditioners and ensure that their buildings are properly insulated, their energy use on hot summer afternoons will be lower. It is the win-win solutions that are required for customers and utilities: customers reduce their bills when they have more efficient appliances, which makes it easier for utilities to provide enough electricity to meet demand.

## Banks and financial institutions

Banks and financial institutions usually provide capital resources needed for wide-scale energy investments. However, since this is not considered the most attractive sector of investment by all players, incentives must be created to encourage banks to direct funds towards energy efficiency measures (e.g. through dedicated credit lines). If banks and financial institutions agree to finance new energy efficiency projects and adjust their requirements to make such capital more readily available to this segment of the market, individuals and companies will be able to launch new projects and contribute to the meeting of the objectives of the roadmap. Governments have a key role to play in stimulating their interest in this field through appropriate policies and new financing instruments, such as e.g., green bonds.

There is increasing scrutiny by regulators and the investing public as to the adequacy of investment research and decision making with regard to issues such as corporate governance, environmental performance and labour practices. A group of fund managers who are members of UNEP FI have constituted an Asset Management Working Group to explore whether these considerations are sufficiently incorporated in asset management. Their purpose is to explore and document the materiality of environmental and social considerations and criteria as they relate to the portfolio management of mutual funds, pension funds and other institutional funds. In addition, funds controlled by many governments are also increasingly requiring attention to environmental and social considerations in how these funds are managed.<sup>8</sup>

## Civil society

Civil society's principal purpose is to spread awareness about issues of societal value and to represent the interests of citizens at large. This also applies to the case of energy efficiency where civil society should look at the social interests of society as a whole rather than the economic interests of a powerful few. Green Building Councils are a prime example of this as they are non-profits working to promote sustainable buildings in numerous EU member states and beyond.<sup>9</sup> Civil society can have great influence on developments in the energy efficiency field by using a number of channels including media, events and lobby-work in political circles. That way, it can shape opinions at different levels and contribute to outcomes, which are favourable for the meeting of the objectives of this roadmap.

## Private individuals

Major energy-relevant investment decisions by households remain a large but underdeveloped opportunity for reducing energy consumption globally. Energy-relevant investment decisions are often associated with beliefs about consequences for and beyond the household and with receiving energy

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<sup>8</sup> UNEP FI: The Asset Management Working Group  
<sup>9</sup> [Our Green Building Councils | World Green Building Council \(worldgbc.org\)](#)



consulting and financial incentives, although the effectiveness of financial measures appears to depend on how they are implemented. On the other hand, private individuals, but also community groups, housing (or homeowner) associations etc. are considered important players when it comes to community financing or crowdfunding/crowdfunding, since ordinary people participate every day in the production, storage and efficient use of the energy they consume and – in the near future – may also share it with other neighbours, friends or citizens elsewhere. When citizens combine forces and invest in energy projects in their communities they become active players. Potential projects for the involvement of private individuals range from renewable energy production, such as wind and solar, to energy efficiency projects including building renovation or refurbishment of street lighting. This makes communities more energy independent, more sustainable and reduces the energy bills for local businesses and consumers.

## 7. What can be done to render energy efficiency investments more attractive?

For projects to run smoothly and for energy efficiency investments to become attractive to investors, **standardization and aggregation** are essential. This stems from the fact that such practices reduce both preparatory and due diligence costs, are more in line with investor requirements, broaden the investor pool and diversify individual asset risks, thereby allowing for the scaling of investments.

The lack of standardization, in general terms, produces higher yield risk, uncertainty related to the demand, higher transaction costs and time delays in processing financing applications, resulting in difficulties in the aggregation of projects. This consequently also means that the access to financing for potential implementers of small and medium-scale energy efficiency projects is greatly enhanced by means of such practices. An important European initiative to be mentioned here is the Energy Efficiency Financial Institutions Group (EEFIG). EEFIG work is providing a significant contribution in accelerating private finance to energy efficiency. The current policy focus is on the European Green Deal and within the EU Recovery Plan frameworks.

EEFIG addresses barriers to energy efficiency financing through both policy design and market-based solutions to increase the scale of energy efficiency investments across Europe. Composed of over 300 representatives from more than 200 organizations, EEFIG's strength are its members - spanning public and private financial institutions, industry representatives and sector experts.

The EEFIG Underwriting Toolkit, a guide to value and risk appraisal for energy efficiency financing, was launched in June 2017. It aims to build capacities among financial institutions and 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.

Within the E-FIX project, the partnership has aimed to develop a standardized approach as a requirement in the **evaluation of energy efficiency projects**, by assessing the following information:

- the value creation potential of energy efficiency investments prioritized versus other investment opportunities requiring capital,
- the maximum feasible investment cost,
- the potential optimization of the project's structure ,
- the effect of an EE project on the credit line and creditworthiness of the implementer
- understanding sensitivities and managing risks,
- a benchmark for post-investment performance reviews,
- the quality and creditworthiness of EE project to be financed,
- the equipment needed to maximize value creation for the investing company and the financing institutions,
- the EE project potential for reduction of greenhouse gas and other emissions and energy consumption.

For the evaluation of EE projects E-FIX has provided a dedicated training module considering certain prerequisites to be met:

## Who are the relevant players and what are they up to?



### The project company

- A legally independent (!) company that is set up to conduct a certain (often infrastructure) project



### The sponsors

- Firms, governments, or international organizations that provide equity in the project company



### The lenders

- Firms (usually banks) that provide debt capital to the project company



### The project

- Project finance is used to conduct a concrete high-investment project like roads, electricity plants, oil field exploration etc.
- The projects usually provide predictable and stable cash flows



### Industrial sponsors with PF linked to core business

- These firms want to use PF to extend their value chain activities (upstream or downstream), but want to minimize risk



### Public sponsors with social welfare goals

- Public-private partnership (PPP) is used to involve private capital to reach a social welfare goal
  - build, operate, transfer (BOT) contracts: A private firm is in charge of building and operating a facility for a while, then the facility is transferred to a public entity
  - build, own, operate, transfer (BOOT) contracts: in addition to BOT, here the private entity also owns the facility for a while
  - build, operate, own (BOO) contracts: in this case, ownership is not transferred to a public entity



### Sponsors who develop, build, and run the plant

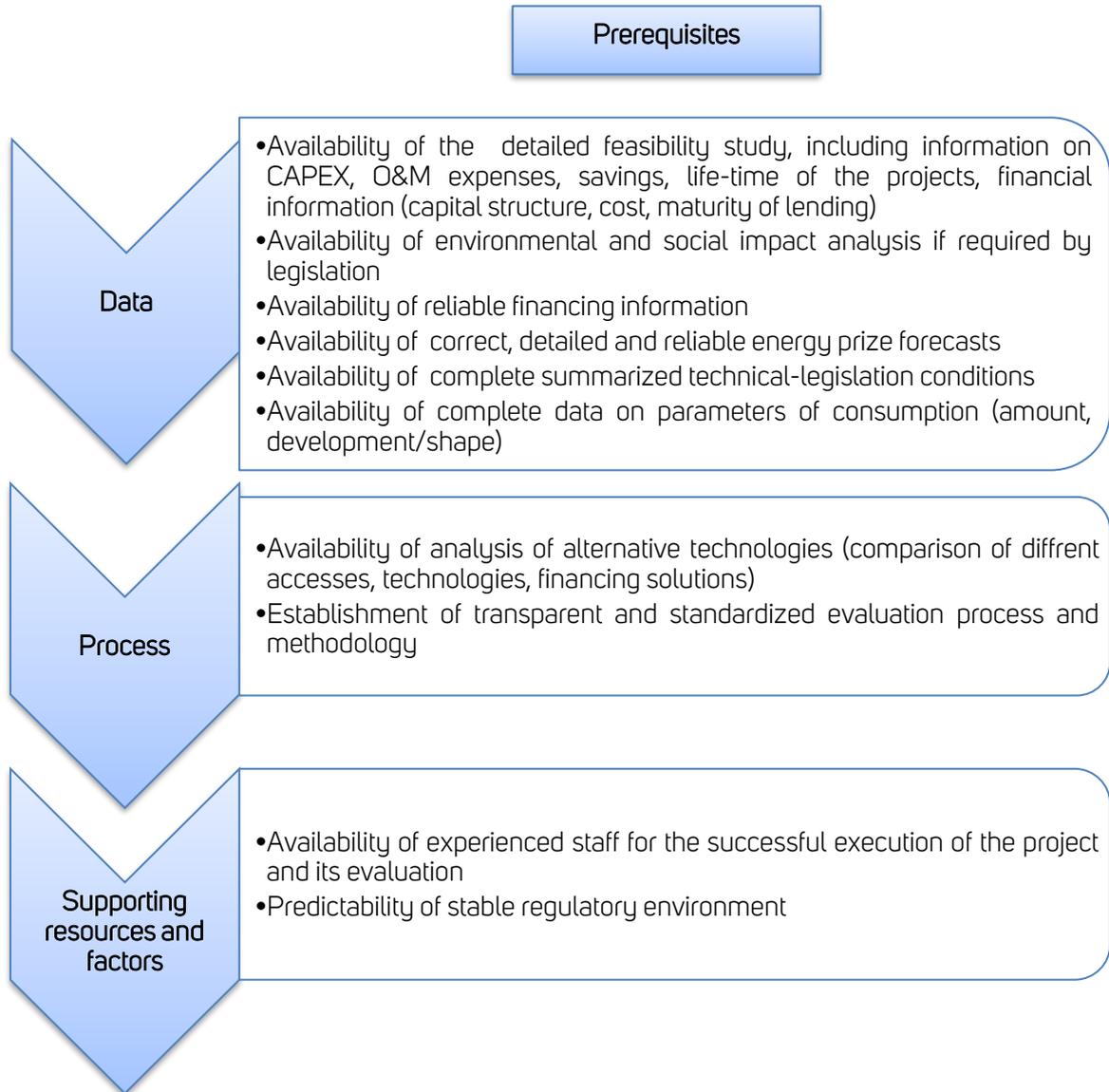
- These players contribute equity to sell their skills in building or running a plant



### Financial investors

- These firms (often investment banks) are looking exclusively for profitable investments

## EE Project relevant information to be acquired



## Clear understanding of the EE project associated risks

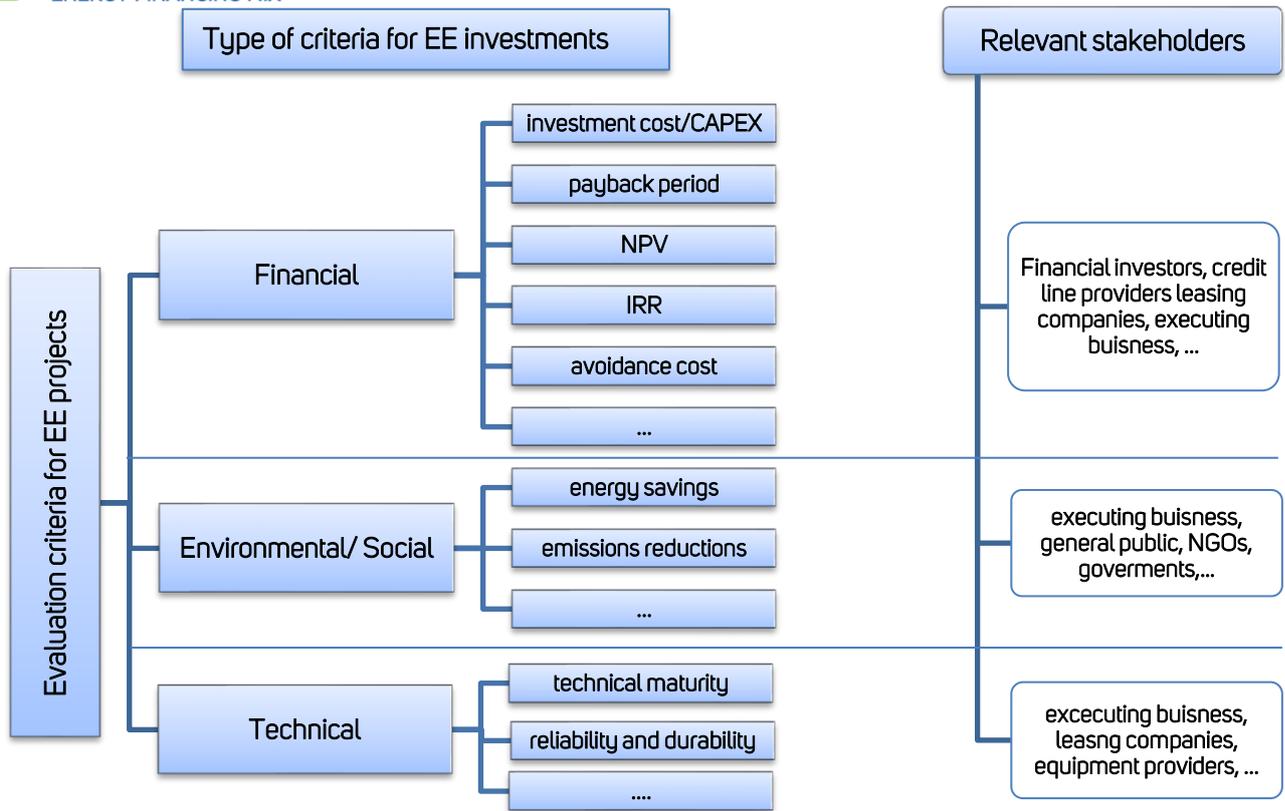
- Technology risks involve unpredictable negative externalities or uncertainties related to the technical specifications of the project. Insufficient information about the facility (e.g. production facility, public or service building, etc.) is perhaps the most obvious risk related to EE installations. While a full audit and project assessment prior to the start of the project would limit such risks, acquiring complete and accurate data on a building is often difficult. Similarly, installation delays relate to the removal of existing equipment and the installation of new equipment, which is typically done during specific working hours and therefore exposed to time delays. The environmental risks include uncertainties about the adaptability of the installed technology to changing climate conditions.

- Behavioural and operational risks can manifest themselves as unexpected consumption patterns, faulty operation or improper maintenance of equipment, and negative utility from time-consuming maintenance or usage. The causes of these risks are often attributed to systematic behavioural biases, a so-called rebound effect, or energy-related behaviour patterns. In case of the EPC model, the major advantage of outsourcing to ESCO/Contractors is that technical risks and financial results of the project thanks to the guaranteed energy savings or fixed price are with the third party.
- As the return on investment from any EE project will likely be the energy savings, financial institutions and investors usually require an accurate assessment of the achieved savings. Therefore, cost effective measurement and verification (M&V) is essential for achieving long-term energy savings.
- Through project financing, sponsors can share project risk with other sponsors. Pooling of capital reduces each provider's distress cost due to the relatively smaller size of the investment and therefore the overall distress costs are reduced. This is an illustration of how structuring can enhance overall firm value.
- Project financed investment exposes the corporation to losses only to the extent of its equity commitment, thereby reducing its distress costs.
- And finally, very often innovative financing mechanisms that are not well-known or introduced in some regions, will be considered more risky due to the lack of experience with the mechanism per se.

### Good project structuring required

It is increasingly common for a financial institution or private investor to express the problem that exists with the lack of preparation of projects in the financing request phase. When funding is requested, projects often lack a structured approach. Without good and consistent presentation, it cannot be expected for projects to receive finance quickly, delaying the process over time.

For this purpose, different mechanisms are being developed within the sector in order to help with the structuring of projects and with producing good documentation.



Stakeholder	Correct EE project evaluation helps...
Investing buisnesses	<ul style="list-style-type: none"> <li>• <b>assess</b> value creation potential of investment in EE project and prioritize versus other investment opportunities requiring capital</li> <li>• <b>determine</b> effect of EE project on credit line and creditworthiness</li> <li>• <b>improve</b> understanding of maximum feasible investment cost</li> <li>• <b>optimize</b> benefits from investment by improving configuration</li> <li>• better <b>understand</b> sensitivities and manage risks</li> <li>• <b>provide</b> benchmark for post-investment performance reviews</li> </ul>
Financial intitutions	<ul style="list-style-type: none"> <li>• <b>evaluate</b> quality and creditworthiness of EE project to be financed</li> </ul>
Equipment providers/ suppliers	<ul style="list-style-type: none"> <li>• <b>identify</b> equipment needed to maximize value creation for investing company and financing institutions</li> </ul>
General public	<ul style="list-style-type: none"> <li>• <b>assess</b> EE project potential for reduction of emission and energy consumption</li> </ul>

Depending on country characteristics, within E-FIX some evaluation mechanisms have been considered more relevant than others:

	Evaluation mechanisms	Description	Relevance						
			AM	AT	CZ	PL	HR	GE (leasing)	GE
Financial	CAPEX (investment costs)	Initial cost to deploy an EE project	5	5	5	5	5	5	5
	Payback period (years)	Investment cost divided by the difference between annual savings minus annual running cost	5	5	5	4	4	1	3
	NPV (net present value)	The discounted future annual savings minus the investment costs	4	4	3	4	4	1	4
	IRR (internal rate of return)	Similar to NPV. The IRR is the discount rate when the NPV is zero	4	4	4	4	4	1	4
	Avoidance costs	Average cost of each kWh energy saved over the lifetime of the projected measure	4	2	2	2	4	1	3
	Qualification for financial support	Does the project qualify for preferential credit lines etc.?	4	na	3	4	5	4	4
	Source of funding	Is the project financed through equity, loan, subsidies, cash-flows, etc.?	4	5	5	5	4	4	4
	Type of energy supplier concerned	Which type of energy supplier does the EE project affect (e.g. district heating provider, wholesale electricity utility)	2	5	2	2	2	1	3
	Terms of the loan	Cost of maturity of debt	5	3	3	na	5	na	na
	Total amount saved	How much can be saved during the lifetime of the measure	na	2	4	na	na	na	na
	Interest	Cost of money from external sources	na	5	5	na	na	na	na
	Rate of potential subsidies	Ease of obtaining and size of subsidies	na	3	5	na	na	na	na
	Collateral required by financing institution	Amount of collateral required	na	3	3	2	na	na	na

Environmental/Social	Primary energy savings	Amount of kWh energy saved over the lifetime of the projected measure	5	3	5	3	5	1	3
	Emission reductions	CO <sub>2</sub> emission saved over the lifetime of the projected measure	1	2	3	2	4	1	2
	Creation of new workplaces	Workplaces created by the project	na	1	1	3	na	na	na
	Reduction of air pollution	Reduction of PM2.5 and PM1 emission levels	na	3	3	4	na	na	na
Technical	Maturity of technology	Qualitative assessment of how mature the technology is	4	4	4	3	4	5	5
	Reliability and durability of technology	Qualitative assessment of how reliable the technology is	4	3	4	4	4	5	5
	Regulatory feasibility	Assessment of whether the EE project will likely fulfil regulatory requirements	4	2	3	4	na	1	3
	Degree of self-sufficiency	Assessment of the share of won energy demand produced on site	4	3	2	3	4	1	4
								Low relevance	
								High relevance	

In addition, several “non-financial” aspects need to be considered when evaluating EE projects:

- **Interaction effects:** Some EE improvement measures interact with other EE projects and can lead to a multiplication of the effect and make it difficult to attribute benefits to a specific project;
- **Project lifetime:** Assumed lifetime has a large effect on most evaluation mechanisms; there are different approaches to assess effects over the lifecycle of an EE technology (economic life, physical life, technological life);
- **Lifecycle cost:** in this context a lifecycle cost assessment (LCA) includes the overall cost of a technology, product or service from “cradle to grave” and allows for full assessment;
- **Additional benefits:** In addition to energy savings, new EE technology often also leads to savings in maintenance and comfort in operation etc., which need to be accounted for.

## 8. What opportunities are there related to energy efficiency?

On the other hand, there are numerous benefits and potentials for energy efficiency across all sectors of economy, summarized below in the context of the E-FIX partner countries' perspectives.

### Legal, political and regulatory opportunities:

Substantial benefit can be reaped through the harmonization of legislation across the EU and the Eastern Partnership states, although it might seem that the regulatory framework currently in place in most EU Member States is only slowly grasping the potential to capitalize on innovative financing mechanisms. This requires strengthened cooperation across national borders, which would allow for the raising of funds for cross-European projects or for projects based in a different country to that of the main fundraisers.

From a policy perspective, the evolving EU 2030 climate and energy framework now includes the major policy objectives and targets concerning greenhouse gas emission reductions, improved energy efficiency and increased share of renewable energy production. In May 2020, the EU announced its long-term recovery strategy as a result of the COVID pandemic, which will guide and support EU member states as they recover from the impacts of the pandemic. The EC proposes a new recovery instrument, Next Generation EU, of EUR 750 billion, which will be added to the multiannual (2021–2027) EU budget. So, the fundamental policy framework for the recovery is a combination of the EU Green Deal, a strengthening of the EU Single Market and adaptation to the digital age.

In most of the E-FIX partner countries, substantial growth rates in sustainable energy investments had been recorded prior to the pandemic, which means that governments have made greater funds available for new climate resilient and sustainable energy infrastructure. At the same time, a general willingness to diversify economically is noted. This signals increased openness to the pursuit of new endeavours, including energy efficiency programmes in states, which had not paid great attention to such measures previously.

Yet, there is the need to better integrate innovative EE financing mechanisms into country strategies and programmes. The sole requirement for this is a certain degree of awareness and expertise at state level for concrete and realistic policies to be formulated as well as monitoring capacities to track and assess the implementation of such strategies.

### Financial opportunities

As the financial sector continues to finance few EE projects, there is vast growth potential. This is especially the case since investors are increasingly shovelling money into sustainable funds, green investments with an ESG focus (Environmental, Social, and Corporate Governance), which also include energy efficiency measures.<sup>10</sup>

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<sup>10</sup> [ESG funds see record inflows in 2019 \(cnbc.com\)](https://www.cnbc.com)

In terms of the three considered financing mechanisms within E-FIX the perspectives are:

- **Crowdfunding:** Some states are considering including Crowdfunding in their national strategies as is the case with the Czech Republic. Having government-level support would help speed up the application of Crowdfunding since it would allow for greater awareness and also foster investor confidence in this relatively new instrument. If governments make the link between energy efficiency and Crowdfunding, EE measures would become increasingly accessible to communities and entities, which were previously restricted in terms of access to finance. In addition, the new EU Regulation (EU) 2020/1503 on European crowdfunding service providers for business makes it easier for crowdfunding platforms to offer their services across the EU and improve access to this form of finance for businesses in need of funding. The initiative allows platforms to apply for an EU label, based on a single set of rules. Investors on crowdfunding platforms are protected by clear rules on information disclosures, rules on governance and risk management, and by a coherent approach to supervision.
- **EPC:** In the case of EPC, there is still a lot of potential to widely introduce contracting mechanisms through the standardization of contracts, which helps reduce risk and renders the practice more attractive to individuals. In addition, the major types of EPC models applied, e.g. those under ‘shared savings’ or ‘guaranteed savings’ contracts, require initiatives like E-FIX to build capacities and knowledge among project owners for them to better understand how they can benefit from the specific EE project case and can simultaneously reduce risks for lenders..
- **Leasing:** Leasing is a straight-forward and easy-to-apply mechanism for EE, enjoying steady growth rates, as demonstrated in Armenia and Georgia. It can prove to be especially advantageous for individuals from weak economies faced with the problem of limited access to funds. A critical distinguishing feature of equipment leasing is that the equipment is the collateral for the financing. The possibility that an equipment finance lender would repossess the energy efficient equipment for non-payment puts the lender in a strong position.

An essential principle of EE financing in the public sector is an optimal mixture of different instruments, e.g. equity, grants and subsidies, loans and possibly mezzanine capital. Project development services require “real” equity capital. Simultaneously, all possibilities of grants and subsidies available on local, regional and national level are usually considered. Since banks are not obliged to hold an equity capital base for municipal loans, e.g. in Austria municipality loans are very cheap, also due to the preferential interest rates. Mezzanine capital can be funded e.g. through crowdfunding campaigns, making projects more expensive (due to increased project development costs) but in total more attractive for beneficiaries due to valorisation of non-financial benefits. Contrary to the facilitation of cash provision, municipalities are forced to avoid an increase of government debt (in conformity with the Maastricht criteria) and are therefore interested in off-balance sheet structures, such as leasing, contracting, or PPP models. With structurally higher energy prices to be expected in Europe in the course of the energy transition, businesses will be facing growing incentives to invest in energy efficiency measures to control energy costs and remain competitive in the globalized business environment. Energy costs can affect firms’ investment decisions and their financial performance in a number of ways, given that energy serves as one of the key inputs to production processes of goods and services.

## Economic and social opportunities:

Energy efficiency is often credited for achieving energy savings, but it also provides so-called 'co-benefits' in other areas, such as:

- Greenhouse gas emissions reductions
- Job creation
- Public health benefits (due to e.g. less air pollution)
- Addressing the energy burden of low-income households
- Increased worker productivity and comfort levels in buildings.

While awareness levels vary substantially across countries, consumers are becoming increasingly aware of the benefits of energy efficiency products and services. Moreover, the younger generations are more eco-friendly than their older citizens, indicating that topics such as EE will gain in clout in politics in the future.

In addition, as a result of the economic downturn due to the COVID-19 crisis, governments will be increasingly forced to develop economic and investment programmes, which can help boost the economy, benefitting the sustainable energy investments, and at the same time providing additional subsidies to promote climate and sustainable energy investments. These state-funded programmes shall leverage additional private sector funding and provide opportunities for innovative financing mechanisms.

## Technical opportunities:

The building sector harbours vast opportunities for EE, at present<sup>11</sup> it promises the largest potential for energy efficiency investments across Europe. Financial mechanisms enabling private individuals, companies and public sector to implement EE projects may encourage market actors to opt for more substantial investments (e.g., deep renovation), which will increase comfort and reduce costs for residents living and people working in those buildings.

Other sectors do provide similar benefits for EE investments, such as the transport sector (considering the switch from inefficient gasoline/diesel engines to electric vehicles), production and service sectors (efficient industrial facilities and service buildings) as well as small and medium sized enterprises (e.g., improving production premises).

At the same time, decreasing prices of RES equipment (mainly PV) also constitute an opportunity, given that renewable energy technologies in combination with energy storage, distributed generation and utilization will become increasingly affordable and attractive, once levelized costs of energy (LCOE) will get lower. Profitable community energy projects will be able to further attract private investments, thus reducing the role of public financing. Local community power projects have huge potential, as they contribute to attracting long-term investments which may reduce the financing costs of renewable energy.

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<sup>11</sup> [2019 Global Status Report for Buildings and Construction | World Green Building Council \(worldgbc.org\)](#)

## 9.A vision for Europe to 2030 related to innovative financing for energy efficiency

In light of the above, this roadmap follows the targets for the EU and the Eastern Partnership countries for the next 10 years and beyond. It aspires to achieve the following:

- **On the political and institutional level:**
  1. A carbon-neutral Europe, based on the extensive application of energy efficiency measures in line with the energy efficiency first principle<sup>12</sup> and the decarbonisation of the energy system across all sectors of economy, following the EU Climate and Energy Package and Green Deal. Special emphasis needs to be placed on energy efficiency, with a greater focus on substantial achievements with greater impact in the building, production and transport sectors. At the same time, there is the need for long-term signals to give investors greater confidence, to help technology providers (e.g. insulation) ensure that sufficient services are made available to meet the EU's targets.
  2. The setting up of regulatory frameworks for innovative financing instruments across the EU and the Eastern Partnership states makes it possible to fully utilize the potential of blended financing mechanisms. This should be achieved by the passing of dedicated legislation, e.g. a "Law on alternative financing mechanisms" in all partner countries, or more specifically, providing the grounds for a Trans-European Crowdfunding law, which regulates financial, administrative and legal questions relating to innovative financing practices.
  3. Sustainable, or green, investments to be made available in different forms. Green investments differ from conventional types of investment mainly by supplementing the classic financial criteria with ecological, social and ethical criteria, for which the classification system was recently confirmed through the EU Taxonomy regulation (EU 2020/852). Since the European (and global) focus is increasingly shifting to climate resilient financing, the volume of funds invested in line with sustainability criteria will increase dramatically. The criteria themselves, however, can still differ significantly, and therefore it is important to examine the orientation of respective financial products carefully.
- **On the level of awareness creation and capacity building:**
  4. Awareness and support for innovative financing mechanisms for EE across sectors be they private or public and from the general public at large. This should be put in place through the allocation of a concrete budget at government-level e.g. for the promotion of long-term renovation strategies and the gradual restructuring of the global economy to become more climate resilient and sustainable. Moreover, there is a need to put the consumer at the centre of any strategy to understand their needs and concerns.
  5. Mobilization of private investors who can be attracted to invest in EE through improved rates of return is essential. This should be supported by a European-level banking strategy, which openly declares the support of such instruments as a priority.

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<sup>12</sup> 'Energy efficiency first' means taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions.

6. Knowledge transfer mechanisms between more and less advanced countries, making it possible to share expertise across borders. This should be supported by the development of EU instruments allowing for cooperation projects related to this sector. Potentially, there are opportunities to partner with initiatives of UNIDO, UNDP, UN-ECE, EBRD, and related global funds such as the Green Climate Fund (GCF), the Global Environment Facility (GEF) and others.
  - o **On the level of innovative financing instruments:**
7. Trans-European networks of practitioners able to cooperate across borders without facing legal, financial or technical hurdles. This should be supported by the creation of an Association of European Crowdfunding practitioners and a relevant Crowdfunding Label.
8. Promoting ESCOs that have proven themselves to be very successful instruments, providing both financial and technical support through Energy Performance Contracting schemes (EPC) to energy efficiency in public infrastructures, mainly in buildings, energy renovation from one source, thus removing the barrier of perceived risk related to the saving measures.
9. Disseminate other attractive financing models that allow using EE equipment without initial investments, such as Leasing, with the possibility to distribute an innovative technology where the cost is beyond the reach of the client but generates cost savings over its lifetime.
10. Promoting other de-risking initiatives and underwriting toolkits, such as DEEP (De-Risking Energy Efficiency Platform<sup>13</sup>), TrustEE<sup>14</sup>, eQuad<sup>15</sup> and other initiatives outside of the EU (e.g. UNDP's DEEI Initiative – De-Risking Energy Efficiency) aiming to access appropriate project finance while lowering upfront due diligence costs for investors.

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<sup>13</sup> <https://deep.eefig.eu/>

<sup>14</sup> <https://www.trust-ee.eu/>

<sup>15</sup> <https://www.eu.jouleassets.com/about-equad>

## 10. E-FIX recommendations to key European stakeholders

### Recommendations for the financing sector:

#### **Standardize financing instruments and methods of documentation and evaluation of EE/RES projects**

It is essential to develop frameworks for the standardization and benchmarking of energy efficiency investments to not only raise standards, make these more attractive but to also facilitate the aggregation of projects. This can be achieved through improved data collection, assessment and evaluation tools (benchmarking, normalization of energy data<sup>16</sup>), labelling schemes, project rating methodologies, risk assessment tools, standardized legal and financial structures including standardized contract stipulations for EPC, value-for-money methodologies, blending procedures, refinancing stipulations etc., as well as data evidence of financial returns of energy efficiency investments. These measures are addressed to private sector financing sources and should also receive support from the state through the creation of nationwide schemes, increasing the quality of investments and reducing the risk level.

#### **Mobilize new sources of capital and new financial instruments for supporting energy efficiency measures**

Traditional sources of private capital, such as commercial banks, are not the only source of private financing; the low-carbon transition can mobilize new sources of private and also public capital and new financial instruments. Capital markets provide a variety of long-term financing options through debt and equity. Bonds are the main debt instrument and can be issued by governments, public financial institutions or, to a lesser extent, companies. Equity can be provided by both public and private actors. The role of institutional investors, such as Pension Funds and Sovereign Wealth Funds in financing long-term debt, including for green investments, has been increasing over the past several years. New financing instruments, such as crowdfunding, and new types of investors, such as angel investors, are also emerging. All these developments in the capital markets have called for the birth of new standards and good practices to guide the socially responsible business of the industry. They also beg for the bundling of services in the form of one-stop-shops to increase accessibility.

**Governments** can consider public financial support for home upgrades – municipalities can also be an important channel to deliver housing programmes or street-lighting upgrades. This will partly help counteract the lack of incentives flowing from low energy prices. At the same time, governments could provide grants or rebates to consumers, retailers, or manufacturers who are willing to improve the efficiency of goods purchased, stocked and produced. Another option would be to back social projects, which are supposed to benefit from crowdfunding, allowing them to enjoy favourable tax conditions for instance and thereby helping energy poor communities.

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<sup>16</sup> as also referred to in the requirements of ISO 50001 Energy Management standard

The problem of lack of financial resources for small-scale projects, working with financing institutions to develop instruments, which make such endeavours attractive for investors, need to be addressed by governments. Energy efficiency projects with longer payback periods have to receive higher subsidy rates than those with short payback periods. In addition, it is important for governments to invest funds in EE to reduce donor-dependence in the Eastern Partnership states since such reliance not only stunts the growth of this sector but equally stands in the way of achieving sustainability.

### **Develop a transnational CF/CI platform with a strong holding attention to attract big community and media appearance**

While national crowdfunding platforms should be developed for energy efficiency projects by national crowdfunding associations, it is also essential to work on creating a transnational platform, which will allow for investments and participation across borders. This will help mobilize investments across the region and help contribute to the development of a stronger Europe. As one example, the Austrian crowdfunding platform operator CONDA launched a “white label” platform called [crowd17.at](http://crowd17.at) with the purpose of financing sustainable energy projects within E-FIX and beyond. Croatia also hosts several crowdfunding platforms, one of them – [Croenergy](http://Croenergy) – with a dedicated focus on financing energy projects.

### **Introduce a guarantee instrument to improve risk sharing**

Energy Performance Contracting (EPC) is a proven model for modernizing mostly public buildings by ESCOs with guaranteed energy and cost savings. Nevertheless, a broad roll-out of EPC is being prevented mainly because of two unresolved issues: the split incentives dilemma and the lack of adequately flexible contract models.

Public guarantee instruments help to reduce risk of bankruptcy by involving external risk takers. Bankruptcy risk is a major barrier for financial institutions to provide off-balance financing and a relevant obstacle for EPC.

## **Recommendations to political decision makers:**

### **Raise awareness levels in society regarding RES/EE and existing financing instruments**

Given that energy efficiency projects still have the reputation of being complex and inaccessible, it is essential to raise the general awareness levels surrounding these technologies and facilitate their mainstreaming among the general public and in technical spheres. **Governments, public agencies and civil society** can launch information campaigns, raising awareness about their own goals and aspirations (relating to the 2030 targets for instance) as well as the benefits of energy efficiency in the residential, the public and private business sectors, relying on the media as a key channel of information sharing.

Public events such as conferences, television programmes and festivals can also be utilized as a means of spreading awareness.

### **Develop and harmonise both European and national crowdfunding laws in line with the new Regulation on European Crowdfunding Service Providers**

**Governments**, combined with **Crowdfunding service providers** should continue developing the EU framework on adopting Laws on Alternative Financing, in addition to the already adopted Regulation on European Crowdfunding Service Providers (EU 2020/1503). Since the laws governing crowdfunding vary vastly across the EU, rendering cross-border activities highly complex and causing confusion on which laws apply (national or EU level regulations), it is essential that **governments** determine clear procedures and laws on Crowdfunding at European and Inter-European level. Also, the integration of support to energy project owners in accessing crowdfunding within local/regional action plans, programmes and strategies is crucial. In some cases/countries, it is important to enable local and regional authorities a possibility to use the crowdfunding model. Moreover, special regulations should be passed, exempting such projects from tax, provided they have a positive effect on the climate through a reduction of CO<sub>2</sub> levels. Furthermore, it would be beneficial to raise the threshold for the prospectus requirements beyond 150k EUR in countries with existing laws, in order to make fundraising for energy efficiency projects easier. In terms of licensing, it would be advantageous to make licenses valid all over the EU and not limit them to one country only.

### **Mainstreaming energy efficiency in all sectors and government programmes**

To realize the vast energy savings potential is not a simple matter, however. Overcoming restrictive public regulations, poor incentive structures, limited expertise and information, and other obstacles requires concerted effort. Although no simple measures or universally applicable policies have been found, experience from a number of countries shows that delivery of major energy efficiency gains in principally all economic sectors is feasible. Mainstreaming programmes (e.g. the “klimaaktiv” initiative in Austria promoting EE in industry/businesses, public procurement and buildings) are relevant to showcase how best practice examples can become the state-of-the-art and replicated on a national and European level and be taken up equally by the public and the private sector.

In public and private procurement and purchasing processes, minimum energy efficiency requirements for any new investments should be made available, either for new or refurbished buildings, appliances, industrial equipment vehicle fleets, public transport or infrastructure. “Green Procurement” procedures must be accompanied by appropriate financial mechanisms that allow to value the benefit of EE solutions over their additional costs. EPC and Leasing can be beneficial instruments to finance high quality technologies and products with no extra financial burden for the beneficiary.

### **COVID-19 effects on economy – a window for green investments**

From today’s perspective, the COVID-19 pandemic might prove to be a game changer in clean energy investment decisions. The global recession will be deeper than the ones that followed the 2008 global financial crisis and the Great Depression in the 1930s. In parallel, global energy and commodity prices are collapsing, weakening the incentives for clean energy investments, including those in energy efficiency. Investing in energy efficiency offers a wide range of benefits, including reducing energy costs, greenhouse gas emissions and improving operational efficiency and comfort. These benefits are particularly relevant given increasing evidence linking air quality and health, including evidence from the current crisis. Efficiency also delivers socio-economic benefits that directly contribute to economic recovery, such as job creation and industrial productivity. In this context, a better understanding of

investment decisions in energy efficiency measures and their key determinants is necessary to design appropriate policy actions and maintain the momentum for climate action.

## **Recommendations concerning technical capacities:**

### **Increase competence levels in relevant professional sectors**

There is limited know-how on energy efficiency and very few professionals are aware of the overlap between finance and energy efficiency. It is essential to familiarize professionals that develop and implement EE projects with innovative financial mechanisms since there is a “language barrier” between financing experts on the one hand, and energy efficiency experts on the other. Dedicated EE business cases are required to mitigate the language barrier and at the same time attract stakeholders for whom the economic viability of EE projects is the main focus. At the same time, financing institutions, real estate owners and industrial players should receive training relating to energy efficiency and the role they can place in its promotion as well as the advantages such measures can entail for them. This recommendation is relevant for all education providers, companies and banks as well as civil society organizations, which can train their target groups. Governmental support is also of great importance since the state can raise the profile of such requirements at national level.

### **Ensure rigorous energy data collection**

Systematic collection of energy data is required in order to be able to grasp the impact of energy efficiency projects. Data availability can be improved by adding targeted questions to industry and statistical surveys, or by developing case studies. The data should be well defined and collected over a long time series, while complying with international reporting standards to ensure comparability among countries. As for the independent evaluation of energy performance, energy performance certificates and benchmarking do play an important role for systematic assessment and available information, and a unified calculation methodology is required in all member states, with the consequence to also digitalise and collect them on a national level – to make it a live, digital and as a decision-making tool available for owners, investors and governments.

### **Promote quality assurance schemes for energy efficiency services**

Reliable and verifiable quality criteria address current barriers to the growth of energy efficiency services and the access to attractive financing sources. Quality criteria for the assessment of EE projects build a bridge between the project developers, investors, and financing institution. Within the E-FIX pilot financing campaigns it became obvious that financing institutions are not interested so much in the technical quality of a project but rather in those factors that influence the risk of non-repayment of the credited amount. A comprehensive set of technical, financial, environmental and social criteria developed in E-FIX helps to improve the financial sustainability of EE projects and increase the likeliness of their approval.

## 11. The contribution of the E-FIX project

The E-FIX project focusses on developing, testing and disseminating innovative financing mechanisms with the focus on the Member States Austria, Croatia, Czech Republic, Poland and the associated countries Armenia and Georgia and make them ambassadors for the innovative financing sector in their geopolitical context.

In order to initiate the knowledge transfer and increase the competencies of market actors in the energy field between partners of Central and South Eastern Europe as well as the Caucasus, the E-FIX partnership has achieved the following results:

- **Trained public officers and private sector stakeholders** to act as Ambassadors, being dedicated stakeholders with a broad professional background coming from the fields of financing and energy project development on E-FIX approach and products developed, such as the comprehensive E-FIX Toolbox. The toolbox consists of full-scale training material to provide introductory-level information on diverse topics relating to energy efficiency and financing, an evaluation guideline of common standards for financing of energy efficiency projects, a quality criteria catalogue providing a project description template with a granular technical and financial criteria description in an Excel-based evaluation tool.
- **Demonstrated the applicability of innovative financing mechanisms** for energy investments with the goal to integrate those mechanisms in the market of the partner countries as replicable solutions. The applicability has been demonstrated with focus on one specific innovative financing mechanism in the field of credit lines for EPC, crowdfunding models or energy efficiency leasing, responding to territorial energy financing and implementation barriers. In total, 6 Pilot Financing Campaigns have been implemented in the partner countries, triggering an energy-related investment volume of approx. 22 million € leading to primary energy savings of approx. 19 GWh per year.
- **Sustainably established innovative financing mechanisms** in the partner countries by drawing up E-FIX Action Plans and creation of Energy Financing Competence Centres (EFCC) to anchor the E-FIX knowledge in the partner countries and provide local stakeholders with information and guidance. The EFCC are considered to act as national contact points for practitioners, project developers, financing providers, and possible beneficiaries interested in the field of sustainable energy financing and data of implemented projects, and make use of the E-FIX products beyond the project duration.
- **The present roadmap** defining the long-term and transnational goals for increasing the uptake of innovative financing mechanisms for energy projects with a scope until 2030.

