

FIRECE – Interreg CENTRAL EUROPE Project CE1131

WPT1 Increasing competence to manage Regional Energy Plans and elaboration of the FIRECE action plan

Report on Regional info and data to support CE transnational market assessment

***DELIVERABLE
D.T2.1.1***

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1. Introduction and definitions

In preparation for the Pilot Action 1 of the Firece project and following the indications of the guidelines and action plan already prepared, in this document the results of the evaluation of market failures and sub-optimal investment situations in some partner regions are summarized, useful for proceeding in the block 1 of the ex-ante assessment of innovative financial instruments.

The need for public intervention through the implementation of financial instruments is justified by the presence of market failures, sub-optimal investment situations and investment needs not met¹.

The concept of **market failure** refers to the non-functioning aspects of the market, in our case relating to the financing of energy efficiency in the industrial sector: these aspects determine an inefficient allocation of resources and involve the underproduction (or overproduction) of services.

The types of market failures that typically affect the low-carbon economy fall into the following categories:

- structural macro-economic failures
- demand-side market failures
- supply-side market failures.

Sub-optimal investment situations concern the underperformance of investment activities: a sub-optimal investment situation is where there is a portfolio of economically viable projects but for one reason or a combination of reasons, there are barriers to making them financially viable.

2. Information collection

The information was collected by answering a questionnaire with a series of basic failures and situations, with the possibility of including specific comments and critical situations. The contributing partners were:

- PP2 Netzwerk Energie & Umwelt e.V. - Leipzig / Germany
- PP3 Regione Emilia-Romagna - Bologna / Italy
- PP4 STRIA Non profit Ltd. Tolna/Hungary
- PP5: Forschung Burgenland GmbH. / Austria
- PP6 Fraunhofer - Gesellschaft zur Förderung der angewandten Forschung e.V. - Leipzig / Germany
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- PP9 IRENA - Istarska Regionalna Energetska Agencija d.o.o. - Labin / Croatia
- PP10 ENVIROS Ltd. Prague/Czech Republic

¹ fi-compass: "Ex-ante assessment methodology for financial instruments in the 2014-2020 programming period Supporting the shift towards low-carbon economy (Thematic objective 4) - Volume IV"

3. Summary of answers

The following table summarizes the failures / situations found and the comments indicated by the partners:

	<i>Applicable</i>							<i>Remarks</i>
	<i>PP3</i>	<i>PP2 & PP6</i>	<i>PP4</i>	<i>PP5</i>	<i>PP8</i>	<i>PP9</i>	<i>PP10</i>	
Structural macro-economic failures								
Negative externalities								
A cost that is suffered by a third party as a result of an economic transaction: it's known as an externality because the actors that take part in the economic transaction do not internalise all of the costs.			X	X	X		X	<p>PP3: problem that exists, but that cannot be quantified precisely.</p> <p>PP4: The Hungarian SME sector is not obligated to deal with energy efficiency or climate issues. State declared energy prices are against raising the interest for the need for energy optimisation, energy savings. Moreover, energy-related investments are less financed by EU funds, especially in the Central Hungary Region. Energy savings are not yet causing tax reduction to companies.</p> <p>PP5: The problem is, that it is not possible to allocate the externalities to the responsible causer on the one hand, on the other hand also subsidies for the capital-intensive industries encourage energy consumption and distort the allocation as well</p> <p>PP9: It is difficult to detect if and which negative externalities do not allow a correct economic evaluation of the investment. For this reason, we think that this type of failure is not applicable.</p> <p>PP10: In the Czech Republic, we still have fossil fuels-based energy mix, and low level on energy / environment-related taxation – which results in negative externalities. EU ETS system works, however it does not cover all emitting sectors.</p>
An example can be represented by the costs sustained collectively for the consequences on the environment and on health due to the use of fossil sources, which are					X	X		

reflected on the level of taxation of the companies and do not allow a correct economic evaluation of the investment								
Lack of adequate regulatory framework		X	X					<p>PP4: Long-term energy efficiency investments not yet prioritised as their relevance and potential impact is more favourable. Financial regulation, investment practices do not make any distinction between energy efficiency and other projects.</p> <p>PP6: As an important regulatory framework, a CO2 (carbon) tax is currently an important discussion in Germany. (https://www.firstclimate.com/en/germany-and-the-carbon-tax/) There are different ideas how to introduce the CO2 tax and how to use the income of the tax. (https://www.cleanenergywire.org/news/tracking-co2-price-debate-germany) In the industry there are many doubts that a CO2 tax could weaken competitiveness of German companies. A comparable CO2 taxation should be introduced in whole Europe.</p> <p>PP8: the high risk in the case of the Polish market.</p>
Adjustment to financial regulatory frameworks to better support capital market innovation, ensure that risk assessment and related capital requirements for long-term energy efficiency investments correctly reflect their risks and develop market potential more innovative sources of financing for energy efficiency								<p>PP3: the framework of regulations exist, thanks above all to the transposition of the European directives, but the specific application norms are not completed or updated. In particular, there is no certainty about the timing of availability of financial instruments</p> <p>PP5: In general Austria shows a good regulatory framework and has a fundamental and comprehensive range of subsidies and financial incentives for energy efficiency investments.</p> <p>PP9: Adequate adjustments to financial regulatory frameworks can provide better support for new and innovative sources of financing for EE.</p>

Lack of regulatory certainty and stability	X			X				<p>PP5: Also a basic regulatory certainty and stability is given. Nevertheless, investment needs are hard to predict and depend on diverse factors like the economic growth, innovation, user behaviour, laws and future environmental regulations. However, a better or further developed regulatory certainty and stability will surely help to increase energy efficiency investments.</p> <p>PP9: on our market regulatory certainty and stability is well provided.</p>
Lack of up-to-date macroeconomic information					X			<p>PP8: for 2018 - a real assessment of the Polish market is a bit of working out.</p>
High sectoral entry barriers depending on model forces (Porter's model).					X			
<i>Demand-side failures</i>								<p>PP8: the problem is investment/project with a high degree of innovation related to the implementation/application of a new unknown or barely known solution (lack of adequate experience). So in addition to financial support, "professional" support would be useful and helpful. Depending on the market situation, we can include both supply and demand.</p>

<p>Asymmetric and imperfect information Imperfect information is problematic when the project sponsor does not understand the potential for energy savings or resource generation. Moreover, even if the project sponsor understands the energy efficiency potential, it is often faced with competing priorities or the need for action on the core business that drains the available financial resources. MAs should identify the amount of marketing and project development activity that is currently being supported in the market and consult with public and private sector stakeholders as to whether this is sufficient.</p>		X	X	X	X		<p>PP4: SMEs are facing more significant problems like lack of educated employment, market changes, increasing competition, which drains the companies' resources.</p> <p>PP5: Especially Burgenland is a rural area in Austria, where you can find a lot of SMEs. SMEs mainly focus on their core business and do not have the know-how or the resources to gain the appropriate know-how regarding subsidies or financing of energy efficiency measures. Better transparency and marketing of financial instruments are requested. The development of applicable informative tools (apps, e.g.) could support companies to tackle energy efficiency measures.</p> <p>PP6: In Saxony the MA has established the SAENA Saxony Energy Agency as service agency e.g. for the industry to promote energy efficiency and inform about the financial programmes for EE and RES projects. They can fill the lack between financing partners and industry who often have different knowledge base about saving potentials. However simplified key data (known by industry and financing partner) would be helpful</p> <p>PP8: for entrepreneurs, this risk can be minimized by high energy costs. The entrepreneur will be determined to seek a solution that reduces costs. It is necessary to educate in the field of understanding the subject of energy efficiency in the long-term aspect.</p> <p>PP10: There is enough information about energy efficiency; it is "known" topic. Large companies are obliged to carry out an energy audit every four years, so they have information about possible measures and savings. The Ministry of Industry supports "soft" projects, including publications or workshops, from its financial programme EFEKT. On the other hand in companies, energy efficiency projects compete internally with other projects, and often they perform worse from economic point of view.</p>
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<p>Imperfect information is problematic when the project sponsor does not understand the potential for energy savings or resource generation. Moreover, even if the project sponsor understands the energy efficiency potential, it is often faced with competing priorities or the need for action on the core business that drains the available financial resources.</p>	<p>X</p>				<p>X</p>	<p>X</p>		<p>PP8: for entrepreneurs, this risk can be minimized by high energy costs. The entrepreneur will be determined to seek a solution that reduces costs. It is necessary to educate in the field of understanding the subject of energy efficiency in the long-term aspect.</p> <p>PP9: Due to the limited availability of skilled personnel and financing experience, both public and private actors in the EE sector underestimate the benefits of energy-cost reductions, resulting in limited interest in EE financing.</p>
<p>Small size of projects and high transaction costs</p>		<p>X</p>						<p>PP6: From the perspective of the industry there are a lot of administrative burdens applying funds for EE and RES projects compared to the concrete saving potential, so that many companies do not use public funds. Project applications should be made easier to handle and timeframe until approval should be shorter</p>

Small size of projects and high transaction costs								<p>PP5: This failure goes along with the prior demand side failure of asymmetric and imperfect information. Generally small and medium companies do not count to the most energy intensive sectors and have a proportioned energy consumption and appropriated sizes of projects. But there also exists SMEs (e.g. Manufactures in the food production,...) with higher needs of energy and have higher energy costs. For EE or changeover to RES it would be very important to support SMEs and their small projects by Federal administration or energy agencies.</p>
<p>One of the main problems for funds looking at investments in energy efficiency and renewable sources is the often reduced size of projects and the relatively high transaction costs needed to place them on the market: overcoming this failure requires standardized contracts or the possibility of merging multiple projects with different risk profiles and dimensions to create an attractive financial perspective. This approach may require significant financing of technical assistance. Furthermore, high transaction costs can be caused by long administrative procedures required for project approval.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>PP8: High barrier for the Lubelskie Voivodeship (the advantage of SME's).</p> <p>PP9: this type of market failure is applicable but it should take into account that difficulties in estimating financial benefits of many small EE projects for private promoters, and high administrative costs of managing many fragmented projects are obvious obstacle to implement a tailor-made FI.</p> <p>PP10: Administration of large amount of small-size project brings high transaction cost. However, the Ministry of Industry recognizes importance of cumulative savings of small projects. 80% of OP allocation goes to SMEs.</p> <p>PP11: The administrative burden of accessing EU funds, state aids are more significant for smaller or inexperienced companies, despite the fact that their developing energy efficiency projects need the most financial supports.</p>	

Scarcity of investment-ready projects		X	X				<p>PP4: Only minor part of innovative project ideas, solutions prove to be market viable due to the lack of knowledge regarding the consumer needs, marketing channels. The lack of financial resources are often mean an obstacle for gaining additional funds, like loans or EU grants.</p> <p>PP5: A lot of small companies and projects have been funded in Austria. For investment ready projects, support and development was given e.g. through platforms like www.foerderportal.at or special consulting companies can help.</p> <p>PP6: To support the industry developing investment-ready projects and exchange experiences between companies the German initiative of Energy Efficiency Networks (https://www.dena.de/en/topics-projects/energy-efficiency/companies/energy-efficient-networks/) could be seen as a good example overcome the lack e.g. the networks receive financial support to engage consultants which know how to prepare investment ready projects and develop project proposal to be funded.</p>
Even if there is access to finance, there is difficulty in preparing bankable projects, due to lack of information or inadequate technical preparation.	X			X	X	X	<p>PP3: this is also due to the lack of certainty about the time availability of Fis</p> <p>PP5: A limit of skilled persons or companies can help preparing bankable projects. Investments in EE projects are low profitable, so the companies won't implement them.</p> <p>PP9: As written above, due to the limited availability of skilled personnel and financing experience, both public and private actors deal with difficulties in preparing bankable project. Benefits from investments in EE projects usually have low profitability and result is that companies are largely unwilling to implement EE improvements in their production processes.</p> <p>PP10: Companies have their long-term investment plans, and prepare projects.</p>
The benefits are in the form of savings rather than revenues, making it harder to secure cash flows.					X	X	X
Savings can be hard to measure due to the difficulties of metering and the influence of variables such as weather and					X		<p>PP3: there are useful tools to reduce and manage the risks associated with the difficulty of guaranteeing and measuring savings</p> <p>PP10: Supported projects are always required to provide independent verification of real savings.</p>

changes of patterns of use.								
There is little standardisation in the development and documentation of projects.					X			PP5: The development is rather high and the standardisation for documentation is given.
Projects are often part of larger projects with other purposes e.g. building modernisation.	X				X	X	X	PP10: For instance – projects of modernization of equipment.
Energy efficiency assets are usually embedded into buildings and processes which presents difficulties for asset finance models.					X			
The split incentive in commercial property whereby the tenant benefits from energy savings whereas the landlord makes the investment.	X			X	X			PP5: There are several PV citizen participation projects in Austria. Through the joint operation of a PV system, tenants and owners in multiple dwelling houses can also be part of the energy autonomy and use the generated electricity themselves.
Problems of bank reliability of the company							X	PP6: Due to the current situation of the financial market, this is rather a problem for many companies. PP10: In case of some projects, it is true.
The financial leverage ratio, understood as debt to equity ratio, is considered too high.	X				X	X		PP3: is a problem especially for SMEs PP10: Companies in early development stages often have modest financial results, which discourage banks supporting loans
Standardization and automation of many processes has led to a reduction in employment (a problem for non-standard projects or a large number of them).					X			

High entry barriers for SME's.					X		
Supply-side failures							
A lack of access to appropriate finance/ high project risks		X	X				X PP4: Capital markets in Hungary is significantly less than in the USA or in Western EU. Therefore opportunities for gainin venture capital in numbers or in amount of capital is far less than in the mentioned countries. The less developed capital market means that investors are less likely to bear smaller return rates. PP6: Actors from the capital market often do not understand technical specifications of EE measures and so may do not trust saving potential. But in Germany there is a change in business culture and also there new financial instruments e.g. Crowdfunding campaigns focussed and EE and RES investments (https://www.econeers.de/). This could be a chance esp. for SME's and start-ups. Beside these instruments we in Leipzig support Start-ups in the sector energy, smart-city and e-health with an accelerator programme and we have been announced as "Smart-Infrastructure-Hub" (https://smartinfrastructurehub.com/) by the German Government also with the aim bringing Start-ups together with investors PP10: FI / subsidies can decrease the risk.
Capital markets are not used to invest in energy efficiency and are unable to accurately assign the price of risk. Lack of finance, especially for SMEs and start-up	X			X	X	X	PP5: It is foreseen to adopt the subsidies models for renewable energy producers medium-term to assess the market. Therefore, a market-driven and competitive support system, which focus on financial investments in EE projects, has to be implemented soon. PP9: Due to the limited experience in EE investment, banks tend to consider them high risk and are either not willing to provide project finance or offer it at high interest rates, limited maturity of loans, and high collateral requirements.
Investments in efficiency are considered at a level of risk such as to require high levels of interest rates or high level of subsidized financing.	X			X	X	X	PP5: As written above- a support system, which focuses on financial investment on EE projects, has to be implemented soon.

<p>A lack of capacity or experience in the supply chain</p>		<p>X</p>	<p>X</p>				<p>PP4: Lack of skilled workers is a significant problem in Hungary.</p> <p>PP2+PP6: There has been an Interreg Central Europe project (2007 – 2013) called CombinES (https://www.keep.eu/project/5571/combining-energy-services-with-subsidy-schemes-to-finance-energy-efficiency-in-central-europe?ss=e91ac63f40665b7bf59ca7bd470bbe83&espon=) comparing different framework condition for EPS and ESCOs in Europe.</p> <p>Further there is a HORIZON2020 project called guarantEE (https://guarantee-project.eu/about-guarantee/) researching the European EPC market, I have attached a summary.</p> <p>In the German EPC market: Private sector: Industry</p> <ul style="list-style-type: none"> o Most relevant opportunities High cost-consciousness, openness to outsourcing o Most relevant barriers and threats Energy efficiency in production processes requires highly specialised know-how/ESCO expertise; Normally only a short project duration is being accepted <p>PP10: EPC/ESCO market is very well developed in the Czech Republic. However, mostly used in public sector while private sector is considered more risky.</p> <p>PP11: Lack of skilled workers is a significant problem in Hungary.</p>
<p>Energy Service Companies (ESCOs) are very important in the market for, and implementation of, energy efficiency projects across the EU. ESCOs need a strong legal framework including public procurement framework, some fiscal incentives, technical and practical experience of using EPC, the capacity to arrange and manage financing and sufficiently</p>	<p>X</p>					<p>X</p>	<p>PP5: ESCOs are common and regulated.</p> <p>PP9: above written obstacles hamper the ESCO market in Croatia, and one of proposed FI could include equity for ESCOs to improve their credit rating and help with commercial financing, allowing for larger-scale investments</p>

developed project pipelines: these conditions are not found uniformly across Europe.								
Other issues are found further down the supply chain in terms of the contractors that undertake the retrofit works: many countries have a lack of skilled workers who know how to undertake the works required and this can be a real market failure			X		X	X		<p>PP5: There is a general lack of specialists and shortage of labour in Austria. There is no study found if and how deeply this effects the supply chain.</p> <p>PP9: with the shortage of skilled workers some employers are already having to cancel some business deals and it has become a very serious problem in Croatia, especially on retrofit works.</p> <p>PP10: There is a stable high economic growth in the Czech Republic. Low unemployment results in a lack of skilled workers, so even less skilled are hired.</p>
High physical costs of entrepreneurs					X			
High behavioral and psychological costs of entrepreneurs (additional effort, additional time commitment, another topic to monitor, etc.)					X			
Sub-optimal investment situations								

<p>A project has a positive IRR (Internal Rate of Return), but is not attractive for private financing due to a variety of factors</p>	X	X	X	X		X	X	<p>PP3: in particular they often present the problem of long payback times.</p> <p>PP4: Financial factors, like high risk perception, unfamiliar asset class, long maturity or lower IRR hinders private venture capital to find energy investments.</p> <p>PP5:</p> <ul style="list-style-type: none"> • high risk perception • unfamiliar asset class • long maturity or a lower IRR than deemed attractive <p>The grant element in an FI and the information an FI can provide can make these investments more attractive</p> <p>PP6: After all, the German industry investment a lot in energy efficiency measures by own interest during the time of high oil prices with approx. 100 \$ per barrel. Now during the time of low oil prices the return of investment is too long. Further Germany counts in comparison of the G20-states and the EU-28 among the countries with the highest energy efficiency. The energy intensity is considered and measured for this as a specific indicator of energy consumption. So further increase of efficiency needs higher investments as measures are more complex and so return of investment takes longer time.</p> <p>PP9: FIs could be supported by grants for technical assistance, especially in project pre-development phases, it can make these investments more attractive.</p> <p>PP10: Partly yes.</p> <p>The main criteria:</p> <ul style="list-style-type: none"> • Applicant mustn't be in red numbers • Payback until 5 years
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<p>There is a gap between the demand for investments in energy efficiency and the goals of the Regional Energy Plan</p> <p>Calculate the investment gap as the difference between the level of investment required to reach the target and the current level: use qualitative and quantitative analysis of project typologies, funding available and experience to identify the types of investments that could be appropriate for an FI; estimate the investment gap in the Programme priorities through calculating the difference between the amount invested to date and an estimation of the amount needed to meet identified objectives.</p>	X	X	X	X	X		<p>PP4: Even though in recent years the available financial support and funds for energy efficiency investment has been growing, the unequal distribution of such funds geographically makes it almost impossible for some companies to exploit them. To attract private investors, rather high ROI, and lower risks are needed, but most energy efficiency investments can result only in decreased utility costs, and in case of new technologies, the risk for market failure is significantly high.</p> <p>PP5: There are loans of the EIB- (https://www.eib.org/en/projects/regions/european-union/austria/index.htm), especially for SME's. There exist financial intermediaries, to fund small projects, environmental, innovative and infrastructural projects. Crowdfunding is also a possibility to fund EE projects. (https://www.crowd4energy.com/fuer-anleger) The Austrian certificate market is another opportunity to invest in EE projects. (www.zertifikateforum.at)</p> <p>PP10: Regional Energy Plans or SECAPs usually do not address private sector so much, because it is out of direct control of the regional / local authority. On the other hand, if the project is not in accordance with regional goals, it is not approved.</p>
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Table 1 - Summary of the criticalities found

4. Indications to carry on the activity

In order to complete the activity A.T2.1 and with reference to the Firece action plan, the failures and the situations illustrated in this document will be used to develop the "Block 1: Market assessment" of the ex-ante assessment, as required by the article 37 (2) of the CPR² and summarized in the following figure:

² Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013

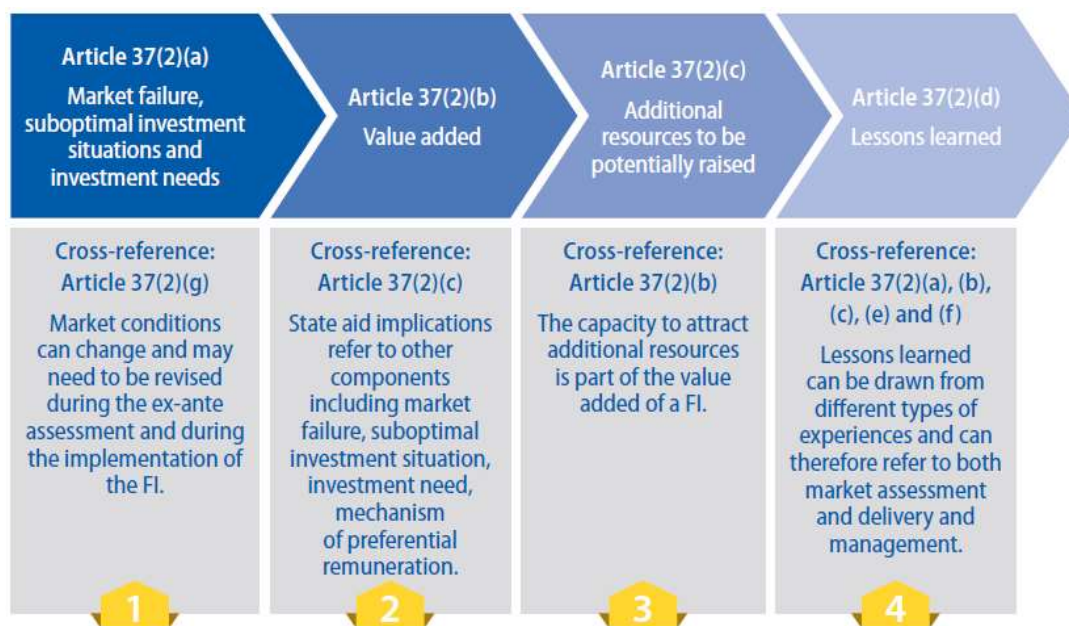


Figure 1 - Block 1 of the ex-ante assessment³

The purposes of block 1 are as follows:

- to examine the balance between supply and demand, highlighting any financing needs (market failures and sub-optimal investment conditions as identified in this document) that require the intervention of Financial Instruments
- to highlight the added value represented by the choice to use Financial Instruments, also presenting measures to ensure consistency with other forms of public intervention and to minimize market distortion
- to identify the possible additional public and private resources that each Financial Instrument has the possibility to activate by providing in-depth information on the SME Initiative, on how the combination of financial instruments and grants can take place and some considerations regarding the need to provide forms of preferential remuneration for private investors
- to identify through the analysis of similar experiences the main success factors and any critical issues to be considered in the setting of Financial Instruments in the areas of study.

As guidelines for drafting the document D.T2.1.2 "Preparation of PA 1: CE Ex-Ante Assessment Analysis report", it is therefore considered to identify the following points to be deepened to finalize the preparation of the Pilot Action 1 of the project:

- 1.1. Analysis of the offer: transversal offer, specific offer for the promotion of low carbon economy in the industrial system
- 1.2. Demand analysis: transversal demand, specific demand for the transition to the low carbon economy in the industrial system
- 1.3. Analysis of the gap between demand and supply

This part can be defined by processing the available statistical data (for example, for RER, based on the calculations of the Bank of Italy regarding regional economic data and on the analysis and forecasts of the Energy Plan)

³ fi-compass: "Ex-ante assessment methodology for financial instruments in the 2014-2020 programming period - General methodology covering all thematic objectives - Volume I"

- 2.1. Evaluation of the added value of Financial Instruments: multiplier effect, possibility of associating public and private resources, sustainability in the medium / long term. Taking up what was suggested by the European Commission⁴, the concept of added value can include these elements:
- the relevance, effectiveness, efficiency of the FIs:
 - advantages of recycling funds over the long-term
 - capacity to attract additional funding from the financial sector and other private investors
 - attracting additional sources of expertise and know-how
 - provision of enhanced incentives to better performance on the part of beneficiaries and final recipients
 - the advantage for the final recipients supported (risk margin reduction, collateral reduction, catalyst effect)
 - how the FIs could support the implementation of thematic objectives or could contribute to focus areas, priorities and benefit the implementation of the local programmes.
- 2.2. Consistency with other forms of public intervention
- 3.1. Estimate of additional public and private resources that the Financial Instrument has the possibility to collect
- 4.1. Evaluation of lessons drawn from the use of similar tools and ex-ante evaluations carried out in the past: excursus of the most significant projects in terms of using similar tools, selected mainly based on their relevance for the territorial context.

5. References

1. Common Provision Regulation (CPR): Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013
2. <https://www.fi-compass.eu/publication/manuals/manual-ex-ante-assessment-guidance-vol-iv-supporting-shift-towards-low-carbon>
3. <https://www.firstclimate.com/en/germany-and-the-carbon-tax/>
4. <https://www.cleanenergywire.org/news/tracking-co2-price-debate-germany>
5. <https://www.dena.de/en/topics-projects/energy-efficiency/companies/energy-efficient-networks/>
6. <https://www.econeers.de/>
7. <https://www.keep.eu/project/5571/combining-energy-services-with-subsidy-schemes-to-finance-energy-efficiency-in-central-europe?ss=e91ac63f40665b7bf59ca7bd470bbe83&espon=>
8. <https://guarantee-project.eu/about-guarantee/>
9. www.fi-compass.eu

⁴ fi-compass: "Guidance for Member States on Article 37(2) CPR– Ex-ante assessment"