



# D.T2.4.7. Evaluation of PA1 addressed to Public Authorities

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**FIRECE CENTRAL EUROPE Project CE1131**

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## 1. Overview

The present report aims to evaluate the ex-ante assessment of innovative financial instruments (FI) designed by the partners within the frame of FIRECE.

To understand the main objectives of FIRECE project and to see how these aims can be achieved the following description from FIRECE homepage can provide information:

“The project aims at improving the capacities of the public sector and related entities to plan territorially based low-carbon strategies in the frame of Regional Energy plans, supporting the low-carbon energy transition of traditional industrial sector to meet the regional energy saving targets defined according to EU and national legislation. The objective will be achieved by supporting Regional Authorities, Energy Agencies and Regional Financial Agencies to elaborate and implement innovative financial instruments (IFIs) particularly addressed to provide Energy savings investments and project plans elaborated by SMEs. In parallel, an assessment procedure will check the quality of the investments and projects elaborated by SMEs to optimize resources and reach the targets. FIRECE project links to the specific objective because it will support public sector to plan and manage instruments able to achieve saving targets. The implementation of Innovative financial instruments and the assessment of the projects submitted by SMEs for energy savings will contribute to achieving the indicators contained in the Regional Energy Plans. Finally, FIRECE contributes to the achievements of the energy saving targets planned at worldwide and EU level.”

(<https://www.interreg-central.eu/Content.Node/FIRECE.html>, downloaded August, 2020)

The partners in FIRECE project who developed an innovative financial instrument are:

- ◆ Federal Province of Upper Austria, Austria
- ◆ South Transdanubian Regional Innovation Agency, Hungary
- ◆ PP3 Emilia - Romagna Region (ERR), Italy
- ◆ Lubelskie Voivodeship, Poland
- ◆ IRENA, the Istarska Regionalna Energetska Agencija Ltd, Croatia
- ◆ Fraunhofer IMW, the Fraunhofer Center for International Management and Knowledge Economy, Germany

The present evaluation of the six proposed FI is based on the following reports:

- ◆ “Preparation of PA 1: CE Ex-Ante Assessment Analysis report” D.T2.1.2 (Austria)
- ◆ “Finalisation of the Ex-Ante assessment analysis and IFI’s implementation in Austria” D.T2.4.2.
- ◆ „Innovative Financial Instruments for industry low carbon energy transition in Central Europe. Finalisation of the Innovative Financial Instrument in Hungary” D.T2.4.6.
- ◆ „D.T2.4.5 - FINALISATION OF THE INNOVATIVE FINANCIAL INSTRUMENT IN EMILIA-ROMAGNA REGION”
- ◆ A.T2.1 and A.T2.4 „Support for regional authorities to develop an ex-ante evaluation analysis”. (Poland)

- ◆ “EX-ANTE ASSESSMENT FOR THE IMPLEMENTATION OF FINANCIAL INSTRUMENTS IN THE INVESTMENT AREAS OF ENERGY EFFICIENCY AND USE OF RENEWABLE ENERGY SOURCES FOR THE ISTRIAN COUNTY” D.T.2.1.2 – „Preparation of PA1: CE Ex-Ante Assessment Analysis report”
- ◆ D.T.2.4.3 – „ Ex-Ante Assessment finalisation and feasibility study for the IFI implementation in Croatia”
- ◆ “Preparation of PA 1: CE Ex-Ante Assessment Analysis report (Saxony, Germany) D.T.2.1.2”
- ◆ “Finalisation of the ex-ante assessment. Analysis and implementation of the FI in Germany D.T.2.4.1”

The listed reports and the proposed FI constructions are evaluated on a multidimensional scoring system built on eight evaluation criteria:

- ◆ Scope of the Assessed Financial Instrument
- ◆ Value Added of the Financial Instrument
- ◆ Assessment of the Additional Resources
- ◆ Incorporation of Previous Experiences
- ◆ Proposed Investment Strategy
- ◆ Expected results of the Financial Instrument
- ◆ Involvement of Stakeholders
- ◆ Transferability

First, the report provides an overview of the evaluation method and scoring developed in the following chapter. The six partners’ FIs are evaluated in separated chapters, and finally, the report concludes.

## 1.1 Evaluation criteria

In this chapter, we develop the evaluation model for the ex-ante assessment reports of the six partners in FIRECE project. The following eight evaluation criteria were given ex-ante, and the content (questions and the belonging scores) for each criterion was to be defined in the following parts of this chapter.

This multidimensional evaluation allows several highly rated solutions for an innovative financial instrument to promote energy efficiency, the use of renewable energy resources and advanced energy technology. Since there are competing aspects among the predefined criteria, a given element of the FI can contribute to attaining a high score in some criteria. At the same time, in other dimensions of the evaluation, it will result in a lower score than the other partner’s FI. Thus the goal of the present report is not to distinguish between “good” and “bad” constructions this supposed contradiction in the assessment of constructional elements only reflects the complexity of aspects influencing the final proposition for the FI.



### 1.1.1.Scope of the Assessed Financial Instrument – 10 points

The main focus of FIRECE is to develop FIs which contribute to the low-carbon energy transition by the Industrial sector among small and medium-sized enterprises (SMEs) in the CE area. This primary focus is tested in this first evaluation criterion.

A well-designed FI should be suitable for the current economic development of the country and to the typical life cycle and financial needs of the target group while it should also harmonize with the European, national and regional directives and strategies concerning the potential beneficiaries at the same time.

In most of the partner countries in FIRECE project, we found that the number of small and medium enterprises is high compared to the number of large caps thus the target group of the FI is the SME sector. Usually, partners report that SMEs face credit rationing, even viable projects will not be funded or are underfinanced. Existing financial solutions require a certain level of management capacities, own financial contribution and create pressing administrative tasks.

Considering these results, the first aspect of the evaluation is whether the designed construction reflects the needs of SME through the flexible size of supported projects, or is there a FI especially designed for micro-enterprises.

We also consider that the FIRECE program has a focus on energy efficiency. However, there is a trade-off between approaching the highest number of potential applicants (thus enhancing the average quality of accepted projects) and delivering financial support for firms investing in innovative energy solutions, the scope of designed FIs should be related to energy efficiency.

Every assessed pilot study contains market gap analyses. Usually, the propositions aim to reduce unsatisfied demand on the funding of potential applicants. The FI will highly be rated if the partner's pilot study confirms that there is not any suitable public or private financial instrument to cover the goals of the FIRECE project.

The novelty and the innovation of the FI is also an aim in the FIRECE pilot projects. In this first evaluation criterion, we only concentrate on the novelties concerning the target group and the focus of their projects. Innovative elements of the construction will be scored in later criteria. If the designed instrument attracts new applicants not yet participating in other subsidy programs or projects without subsidized funding until now, a higher score can be attained.

Accordingly, the scope of the assessed financial instruments is evaluated based on the following questions listed below. The scoring and a short explanation are as follows:

According to Target group of the financial product:

1. Is the size of funding differentiated according to the project size of the beneficiaries? (0 – no, 2 – yes)
2. Is there a distinction between applicants with and without experiences in energy efficiency projects (relevant experience: former investment in energy efficiency, in production of renewable energy or energy-saving technological solutions)? (0 – no,

- 1 – no, but there are other elements in the construction to assure project quality, 2 - yes)
3. What kind of projects can be financed by the designed FI? (1 - projects related to energy efficiency or RES, 2 - projects related to energy efficiency or RES and at the same time explicitly linked to already existing regional, national or European measures)
  4. Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing? (0 – yes, entirely, 1 – only partially, 2- no, there is a significant market gap)
  5. Novelty of FI regarding target group or supported activity (Does the FI targets companies, formerly invisible for Management Authorities? Or does it finance RES and energy efficiency projects not covered by subsidy programs yet?) (1 – yes, partially new targets or new activity, 2 – yes, an entirely new activity or new target)

### 1.1.2.Value Added of the Financial Instrument – 10 points

The aim of all financial decisions is to attain the highest return or gain in the wealth of the investor possible by one unit of investment at a given level of risk. The value added (VA) of the FI can be considered similarly: partners design solutions which are maximizing the added value while minimizing the risk of related negative phenomena.

The added value can be interpreted in several ways. The financial results of FI are primarily the multiplier and the leverage effect. The higher the leverage, the larger the final size of the recipients' project compared to the initial financial resources from the EU or from the subsidy program (which already consists of the EU funds and state and regional resources). The multiplier effect occurs when the revolving elements of FI assure the increase of the number of projects and the total amount of investment till and after the end of the program. The additional private resources mobilized by final recipients contribute to the leverage, but they are part of another evaluation criterion (see Assessment of the Additional Resources). However, it is important to note that the higher portion of revolving funds in the FI does not necessarily mean a better construction. Remember that a non-refundable part is in some market situations an essential element of FI to meet market needs and respond to verified market failures. FIs combining grants and loans enable projects and sector investment programs that could not have been carried out otherwise.

Compared to the financial, quantitative effects, the qualitative dimension of value added consists of broad socio-economic consequences. The qualitative analysis expands to all the changes that take place in the real economy as a result of using financial instruments. Since there is another evaluation criterion (see Expected results of the Financial Instrument) closely related to these questions the assessment of value added concentrates only on the ability of the proposed FI to reduce the market gap in the financing of beneficiaries. The FI should reduce barriers to entry for applicants compared to other existing financial products on the market. According to the partners' reports following aspects are to be considered to raise market failures: SMEs have a limited level of management capacities; there is difficulty of own financial contribution; participating

in subsidy programs creates pressing administrative tasks. All other results in the real economy of FI are part of the criterion "Expected results of the Financial Instrument".

The consistency of FI with other forms of interventions and measures in the region is a crucial element in the success of a construction. Consistency can be understood in programs with similar tools or similar target groups. Partners' reports should assess both of the consistencies. A complementarity of the proposed and already existing solution is preferred and can create synergy effects between the complementary forms of support. Explored competitiveness between the available forms of public intervention usually prevents complementarities; thus does not lead to a preferable situation.

1. Is there a qualitative analysis of the value added? (0 – no; 1 – short overview; 2 – detailed analysis)
2. Are multiplicative or leverage effects estimated? (0 – no; 1 – illustration only; 2 – estimate)
3. Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program? (0 – no; 1 – yes)
4. Is the proposed FI consistent with other forms of interventions and measures in the region? (consistency with programs using similar tools or approaching similar target group) (0 - no or not mentioned; 1 – consistency approved)
5. Does the FI set lower barriers to entry for applicants than other existing financial products available on the market? (Is any of the following aspects built into the construction of FI: limited level of management capacities, the difficulty of own financial contribution, pressing administrative tasks, state-supported loan, guarantee, consultation, preferential interest rate, simplified application process, short approval process - 1 point for each of the listed aspects, max. 4)

### 1.1.3. Assessment of the Additional Resources – 10 points

The leverage and multiplicative effect of the FI are assessed in several evaluation criteria. But to achieve the forecasted leverage and multiplication, the source of additional financing should be deeply explored. Possible constructions in the private and public sector are interesting elements of this analysis but more important information is the available volume of financing opportunities as it can be a constraint in this aspect.

Additional resources can be generated at different levels of the FI. The final recipient can contribute to the project as well the program fund consisting of EU funds and the co-financing of the member state can be supplemented by sources of private financial intermediaries.

1. Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)
2. Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)

3. Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fund or managing authority) (1-1 for each mentioned program, max.3)
4. Are there existing private financial products described available at any level of FI? (final recipient, financial instrument, fund or managing authority) (1-1 for each mentioned product, max.3)

#### 1.1.4. Incorporation of Previous Experiences – 15 points

FIRECE aims to design an innovative FI that contributes to the low-carbon energy transition by the Industrial sector among small and medium-sized enterprises (SMEs) in the CE area. The success of this goal depends on the ability of FI to meet the special needs of the SME sector, particularly those emerging from the specialities of energy efficiency investments.

The first step in this kind of design process is to collect all the relevant previous experiences. Relevant experiences come from all private and public financing opportunities offered to SMEs. A separated supply and demand side assessment helps to explore potential market failures and to estimate the market gap, the missing part of external financing in SMEs' activity. Not only reports on good practices but also pitfalls of previous programs are important to find a suitable construction to the target group.

At that point, experiences of the target group are crucial to highlight their relevant needs that are not covered yet by existing constructions. Their attitude toward energy efficiency investment, their knowledge and consciousness on the energy usage of their firm, and that of possible reductions and savings are also the cornerstone of product design.

Only know-how on financing is insufficient because financed projects need special expertise in energy technologies. Thus the possible size of the decrease in energy utilization or an estimate on the planned raise in the use of RES should be based on grounded information coming from practitioners in the energy sector.

After having collected and structured information about the above-mentioned topics, partners can design a FI that gives adequate answers to failures of previous financing opportunities.

The more source of experience, the higher is the probability of the creation of a well-suited FI to the aims of FIRECE. It contributes to the transferability of the construction if there are relevant and transferable foreign experiences in the assessment, which can be a legitimate goal of cross-border FIRECE program.

1. Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)
2. Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)

3. Does the report explicitly identify failures of previous financing opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)
4. Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)
5. Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information separately, or quantitative estimation of market gap/ financing need)

### 1.1.5. Proposed Investment Strategy – 10 points

The FIRECE project aims to contribute to the achievements of the targeted results of Regional Energy Plans through increased use of (innovative) financial instruments in the Central Europe area. The first and most crucial investment strategy question is the possible volume of total financing in the FIRECE program. But we have to distinguish between the initial EU cash flows and the final volume of financing attainable by beneficiaries. As already mentioned, if the FI construction can create leverage or a multiplier effect, then one unit of fund flow from the EU can achieve a larger size of financing at the final beneficiary. Thus, when defining the total volume of exercisable financial resources, the EU's contribution and co-financing of member states are important. Then based on the estimates of the multiplier effect of revolving funds, the total volume of subvention can be defined. At last, the total volume of funded projects is the product of leverage and volume of subvention. Investment strategies should report some target figures on these volumes.

Informational asymmetry in lending arises between the lender and the borrower. The lender always has less information on the financed project and on the borrower's efforts to maximize the total project's size and not only that of his share. Thus financial contracts aim to incite the borrowers to start only profitable projects and to "behave". When incentives meet their objectives, credit rationing will be lower. When defining the FIRECE project's investment strategy, these contract theoretical aspects have to be applied to FI's design.

Most of the FIRECE partners observed a long payback period of energy efficiency projects already undertaken, which results that SMEs often cannot apply for financing in the private sector because of shorter maturities. Investment strategy should consider a longer collection of refundable elements and provide a longer maturity of loans harmonizing with the longer payback period of energy projects.

As state aid rules should be applied to several proposed constructions, an additional assessment in terms of market and organizational consequences is needed. Partners' reports should refer to this question as well.

The innovation of FI is an emphasized requirement in the FIRECE project because FIRECE's objective is to elaborate and implement innovative financial instruments mainly addressed to provide Energy savings investments and projects elaborated by SMEs. There is a wide range of innovations in the designed FI's which have to suit the stage of

development of the given member state. Crowdfunding, consultancy or construction linked to Energy Performance Contract can be adequate answers to market needs in different market situations.

1. The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)
2. Decrease of credit rationing:
  - 2.1. Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes)
  - 2.2. Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)
3. Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)
4. Is the FI innovative? (1-1 for each of the following, max. 3 points: crowdfunding, consultancy, construction linked to Energy Performance Contract, other innovative solution)
5. Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)

#### 1.1.6.Expected results of the Financial Instrument – 15 points

According to the short overview of the FIRECE Project at homepage (<https://www.interreg-central.eu/Content.Node/FIRECE.html>), „the project aims to contribute to the implementation of the Regional Energy Plans and contribute to achieving the targets (in terms of Energy savings and RES) planned at EU and National Level. Actually, several countries are not reaching the targets planned, and the lack of investments by the industry plays a significant role in this phenomenon. Enterprises located in partner countries will be assisted to apply to the innovative financial instruments with assessed investment plans. With the Innovative Financial Instruments, partner regions will improve their capacity to meet Energy savings and RES targets according to their Regional Energy Plans and will contribute to reaching the targeted % of savings and reduction of fossil fuel by the industry.”

As already in part 1.1.2. we noted the effects of the projects and the use of FI have broad socio-economic consequences. The analysis expands to all the changes in the real economy as a result of using financial instruments. After assessing the decrease in the market gap in value added analysis, all other results in the real economy of FI will be scored in this criterion.

The most significant impact in energy returns can be created when the number of subjects reached by the instrument is the highest; therefore, the target group's size and the number of approached agents of the target group is an important value driver in FIRECE projects.

As the program is related to the Regional Energy Plan, it is essential to support firms only if they will contribute to the Regional Targets in terms of energy savings. Measures for this energy saving are an important part of the criterion for expected results.

All investors aim to invest the most effective way (to reach the highest result per unit of investment). A structured concept on beneficiaries' energy saving opportunities helps to concentrate on those parts in firms' business processes where the highest effect can be achieved. Thus an energy audit or all other forms of consultation with energy experts assures to meet energy savings as high as possible.

1. Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)
2. Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)
3. Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)
4. Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points)
  - 4.1. Does the project decrease energy expenses?
  - 4.2. Does the project increase competitiveness?
  - 4.3. Does the FI shorten the payback period of the investment?
  - 4.4. Does the project create new sources of revenue for beneficiaries/increase revenue?
5. Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)

### 1.1.7. Involvement of Stakeholders – 15 points

Any action taken by any organization (e.g., corporation, authority) or any group might affect those people who are linked with them inside or outside the organization or group. The first appearance of the notion „stakeholder“ was in 1963 and was defined as the set of „groups without whose support the organization would cease to exist“ (see Freeman and Reed, 1983<sup>1</sup>). Since then, it is a fundamental element of works on strategic management, corporate governance or corporate social responsibility.

According to the D.T.2.3.1. Methodology for the PA1 addressed to Public Authorities the involvement of financial intermediaries and other stakeholders is essential. They dispose an overall picture of the market, the existing financial constructions, their advantages, disadvantages and they also have information about the demand. The designed FIs address to SMEs, thus direct involvement of SMEs will help to meet real needs and narrow market gaps. As FIRECE program aims to incite energy efficiency investments, contractors possess key information about the eligible investment possibilities. Experiences of other stakeholders also improve the construction of FI; their involvement can contribute to value creation as well.

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<sup>1</sup> Freeman, R. Edward; Reed, David L. (1983). "Stockholders and Stakeholders: A new perspective on Corporate Governance". *California Management Review*. 25 (3): 88-106. doi:10.2307/41165018. JSTOR 41165018.



In the implementation phase of the project, a high number of stakeholders is not necessarily desired. But precise coordination should take place among different participants from the supporter side (authorities, fund managers). Their well-defined scope of activity helps to avoid failures of the subvention process.

1. Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and their relation to the project is also defined)
2. Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially, 2 – principles of cooperation as well, 3 – entirely)
3. Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)
  - ◆ Ministries
  - ◆ Managing authorities of relevant operative programs
  - ◆ Representatives of the target group (Chamber, SMEs)
  - ◆ Financial Institutions
  - ◆ Academy (financial and enterprise faculties of economic universities/business schools)
  - ◆ Others (venture capital agency, a crowdfunding platform, etc.)
4. Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)
  - ◆ State, Ministries
  - ◆ Managing authorities
  - ◆ Experts, advisers (in energy efficiency, in SME financing, in managing tasks related to FI)
  - ◆ Representatives of target group (Chamber, SMEs)
  - ◆ Financial Institutes
  - ◆ Foreign partners
  - ◆ Others (venture capital agency, crowd funding platform...etc.)

### 1.1.8. Transferability – 15 points

As the FIRECE partners are regional actors of member states in the EU, it is important that they should design solutions which can be applied on the national level. Good practices can inspire other member states to adopt elements of prospering programs if market circumstances and the business environment are close to those of the original partner.

The first question when considering transferability is the assessment of the applied methodology. Appropriate and well-implemented research is the cornerstone of the generalisability of results. At least qualitative results should highlight to partners which aspects they should consider when designing the FI. The more primary research took place in this phase, the relevant and the actual the findings are.

In most academic research, scientists have more confidence in quantitative methods which are usually designed based on preliminary qualitative findings. Primary quantitative research provides the mathematical and statistical background of generalisation.



If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. The FIs may be well-tailored constructions to the special needs of the target group or the market failures of the given country (e.g. uncertainty on the pending Renewable Energy Act in Poland, see the report “A.T2.1 and A.T2.4 Support for regional authorities to develop an ex-ante evaluation analysis”). However, there may be a trade-off between well-suited solutions to regional failures and generally applicable constructions, a transfer of knowledge and experiences in a cross-border, transnational project is valuable in any case.

1. Are the results of the study based on qualitative research? (0-6: 1 – only desktop research without references, 2 – desktop research with less than 5 external references, 3 – desktop research with more than 5 external references, +1 – interviews with experts, +1 – workshops, +1- any other kind of qualitative research)
2. Are the findings of the study based on quantitative research? (1 – only tables, figures charts, 2 – quantitative methodology with a sample size smaller than 50, 3 – quantitative methodology with a representative sample or with a sample size larger than 100)
3. Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 – detailed)
4. Will the construction provide a knowledge base transferable to other regions? (0 – no; 1 – partially, 2 – entirely)
5. Will the construction provide a knowledge base transferable to other member states? (0 – no; 1 – partially, 2 – entirely)

## 2. Evaluation of the Ex-Ante Assessment Federal Province of Upper Austria

The Austrian partner in FIRECE is the Federal Province of Upper Austria. The evaluation of the designed innovative FI is based on the reports “Preparation of PA 1: CE Ex-Ante Assessment Analysis report” D.T2.1.2 and “Finalisation of the Ex-Ante assessment analysis and IFI’s implementation in Austria” D.T2.4.2.

### 2.1 Summary of the Proposed Financial Instrument

According to the partner’s report, in Austria there are a lot of direct funding schemes, such as, subsidies for nearly every kind of energy-related action (e.g., reduction of greenhouse gases or the implementation of renewable energy) at the state level as well as at province level. However, in the area of financing young, highly innovative and growth-oriented companies in the region, there is still a gap in the supply of venture capital. In 2011 the Federal Province of Upper Austria had launched the Upper Austrian High-Tech Fund to improve the equity base of small and medium-sized enterprises. The Federal Province of Upper Austria intends to re-launch the Upper Austrian High-Tech Fund with the support of the European Regional Development Fund (ERDF). The previous Upper Austrian High-Tech Fund offered typical and atypical silent partnerships, open participation in the basic or share capital, as well as limited liability capital and loans with profit participation or

subordinated loans. The external financing part of projects took a range between 250,000 Euros and 1.5 million Euros per company. The target group included start-ups and existing companies entering new business areas by starting particularly innovative technology-oriented projects. The scope of the FI is not limited to energy efficiency, because the partner prefers less focused interventions because he reported an almost unmanageable network of funding priorities and actions in Austria, which results in efficiency losses.

## 2.2 Quantitative Evaluation

Table 1: Quantitative evaluation of Federal Province of Upper Austria's FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
<b>1. Scope of the assessed financial instrument</b>		<b>10</b>	<b>7</b>
1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1
1.3	What kind of projects can be financed by the designed FI?	2	1
(1.4)	Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2
(1.5)	Novelty of FI regarding target group or supported activity	2	1
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>5</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	1
2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1

(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1
(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	0
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>5</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)	2	0
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	2
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fund or managing authority) (1-1 for each mentioned program, max.3)	3	2
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	1
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>12</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	5
4.2	Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	2

4.3	Does the report explicitly identify failures of previous financing opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)	2	2
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>7</b>
5.1	The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)	2	0
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes)  Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)	2	2
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)	1	1
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	2
(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2
<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>5</b>
6.1	Number of approached agents of the target group (0 – no information, 1 – information on the total size of the	2	0

	target group, 2 – information on the approached targets)		
6.2	Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)	2	2
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	0
(6.4)	Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):  Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?  Does the project create new sources of revenue for beneficiaries/increase revenue?	4	3
(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	0
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>15</b>
7.1	Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and their relation to the project is also defined)	2	2
7.2	Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially, 2 – principles of cooperation as well, 3 – entirely)	3	3
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	5

(7.4)	Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)	5	5
<b>8. Transferability</b>		<b>15</b>	<b>12</b>
8.1	Are the results of the study based on qualitative research? (1-6: 1 - only desktop research with less than 5 external citations, 2 - desktop research with 5-15 external references, 3 - desktop research with more than 15 external references, +1 - interviews with experts, +1 - workshops, +1- any other kind of qualitative research)	6	4
8.2	Are the findings of the study based on quantitative research? (0 - no quantitative methodology, 1 - survey with a sample size less than 50 or without any information on sample size, 2 - survey with a sample size larger than 50, 3 - survey with a representative sample)	3	2
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 - detailed)	2	2
(8.4)	Will the construction provide a knowledge base transferable to other regions? (0 - no; 1 - partially, 2 - entirely)	2	2
(8.5)	Will the construction provide a knowledge base transferable to other member states? (0 - no; 1 - partially, 2 - entirely)	2	2
<b>TOTAL SCORE</b>		<b>100</b>	<b>68</b>

Source: own table

## 2.3 Summary of the evaluation areas and justification

The rather low score of Austrian partner is explained by the more general focus of the proposed FI. Thus the FI is targeting high-tech SMEs and start-ups, the evaluation criteria „Scope of the Assessed Financial Instrument“ and „Expected Results of Financial Instrument“ show off this divergence from the aim of FIRECE program. The investment strategy is detailed and based on previous experiences of the last decades resulting in a higher score. Criteria like additional resources and value added are less explained than required so the partner can easily improve the attained score in these dimensions by giving a more detailed assessment. Transferability and involvement of stakeholders are sufficiently presented in their report as the rather higher scores show.

### 2.3.1 Scope of the Assessed Financial Instrument

In 2011 the Federal Province of Upper Austria started Upper Austrian High-Techs Fund, now the partner intends to re-launch the fund with the support of the European Regional Development Fund (ERDF). The previous program aimed to improve the equity base of small and medium-sized enterprises and offered share capital, limited liability capital and loans with profit participation or subordinated loans. The scope of the FI is broader than energy efficiency, as the partner reports the designed FI is related to the following axis of "ERDF Programme Investments in Growth and Employment Austria 2014-2020" approved by the EU Commission in 2014:

- ♦ priority axis 3d: "Promotion of the ability of SMEs to participate in the growth of regional, national and international markets and in the innovation process"
- ♦ entire priority axis 2: "Strengthening the competitiveness of small and medium-sized enterprises"
- ♦ priority axis 3a: "Promotion of entrepreneurship, in particular by facilitating the economic exploitation of new ideas and encouraging the creation of new businesses, including through business incubators"
- ♦ priority axis 1b: "Promotion of business investment in R&I"
- ♦ priority axis 1: "Strengthening regional competitiveness through research, technological development and innovation".

As the partner's report summarizes the above-listed priority axes on page 18, the scope of the designed FI is defined the following way: "the fund focuses its support on the high technology sector and is aimed at companies in the information and communication technologies (ICT), life sciences, mechatronics and process automation, energy (energy efficiency, energy management and renewable energies), materials/lightweight construction and logistics sectors and corporate networks."

Previous experiences incited the wide range of FI, and in the future, the partner wants to avoid efficiency losses in consequence of overlapping network of funding priorities and actions in Austria.

The lower score in the valuation of FI is due to this lack of focus because FIRECE projects should have a clear and well-defined focus on energy efficiency. The partner does not provide detailed information about differentiated project size. FI does not offer differentiated constructions depending on the applicants' experiences in energy efficiency projects. However, a significant market gap can be narrowed by re-launching the Upper Austrian High-Tech Fund, the novelty of target group or that of the supported activity is only partially approved, because an already existing program will offer financing to a target group (SMEs) already covered by several programs in Austria.

### 2.3.2 Value Added of the Financial Instrument

The assessment of value added (VA) in the Upper Austrian report is based on the statement that there is a funding gap in the area of risk capital financing which can be reduced by continued operation of Upper Austrian High-Tech Fund. The assessment of value added follows the required structure, namely: analysis of the qualitative and quantitative added value of the financial instrument, consistency of the financial instrument with other types of public intervention, implications under state aid rules, the proportionality of the proposed intervention.

When describing the qualitative VA, the report underlines that the market gap is narrowed by providing additional capital for innovative Upper Austrian companies in the early and growth phase. Thus, the report mentions in general that through venture capital, the funded firms obtain specialized know-how, consulting and brokerage services; there is no information on the implementation of such constructional elements in the designed program.

The consistency of FI with other forms of existing financial opportunities is proved based on experts' opinion. Although there is a similar venture capital instrument, the Start-up fund, which was launched in 2013, there is no conflict of interest with the FIRECE financed FI. The Start-up fund targets small companies younger than six years. Production of innovative products or offer of innovative services is funded in a volume of EUR 100,000 up to a maximum of EUR 3 million at a maturity of 10 years.

In the quantitative analyses of VA, the report contains a detailed comparison of leverage achievable by grants or participation. The leverage can attain a level of 4 in the case of non-refundable instruments, and the total quantitative added value raises to 16.7 (4\*4.22) in case of revolving instruments.

Because the designed FIRECE FI is already a running construction, it will not set lower barriers to entry for applicants than other existing financial products available on the market. The partner can improve the assessment of VA and the obtained score by giving a more detailed description of how the FI can weaken barriers to financing.

### 2.3.3 Assessment of the Additional Resources

As the FI will be a renewal of an already existing construction, the Upper Austrian High-Tech Fund, the potential additional resources have been already explored during the present program. The fact that the partner decided to relaunch the fund proves that it has been a viable construction.



Although there is no estimate on the available volume of financing opportunities on the market, the potential leverage achieved by additional resources is included in the report. According to the assessment of leverage the “aws erp- SME programme” or the “aws erp technology programme”, can also help to leverage venture capital. Thus, the partner based on the previous experiences of Upper Austrian High-Tech Fund reports the asymmetric characteristic of profit and loss statement, it is clear that there is a need to create incentives for investors. Through an appropriate incentive scheme, additional funds can be mobilized through the use of ERDF funding which contributes to achieving the highest possible leverage effect (financial resources to final recipients/EU contribution).

According to page 19, the report calculates that the expected leverage for the Upper Austrian High-Tech fund can achieve 1:4 with further funds of 33% and 1:6 in the mobilization of further funds.

Existing private or public programs are partially described; the report could be improved by an additional description of such available programs or products on the market. At that stage of assessment, the constructions of AWS (Austria Wirtschaftsservice Gesellschaft mbH, see above) and possible crowdfunding opportunities are mentioned.

### 2.3.4 Incorporation of Previous Experiences

The report provides a short overview not only of the recent period but on the whole 25 years long interval of the use of resources from the European Structural and Investment Funds or their predecessors in Austria. The report cites studies that analyse the effects of Community policy interventions (more precisely the interventions of the European Rural Development Programme - EAFRD, the European Regional Development Fund - ERDF, the European Social Fund - ESF and the European Fisheries Fund - EMFF), on spatial development in Austria. The partner aims to improve future programs by providing feedback at the stage of program design by collecting critiques of the current supporting system. This motivation is highly acceptable as the preparations for the new program period 2021-27 have already begun.

The report also includes a short collection of the main funding instruments at the regional, national and European level. All these FIs are available to innovative technology companies in the early phases of their life cycle in Upper Austria (see page 9. Figure 1 in partner’s report).

Figure 1: Funding instruments in Upper Austria

	Seed	Start-up	Growth	Later phases
regional level	Upper Austrian Hightech fonds			
	Start-up fonds & Standard participation KGG/ UBG			
	Upper Austrian Research fonds			
national level	aws start-up fonds		aws middle-class fonds	
	aws Venture Capital Initiative			
	aws Programmes for young entrepreneurs		aws erp-SME-programme	
	aws PreSeed	aws Seedfinancing	aws ers-technology programme	
	basic programme research funding company			
	aws Guarantee programme			
EU level	european Angels fund/ cofinancing with aws			
	EIF/ ERP umbrellafund			
	COSME		COSME	
	Horizon 2020			

Risk capital	loan programme
subsidy programme	guarantee programme

Source: page 9. Figure 1 in partner's report

As the scope of the designed instrument is more general than energy efficiency itself, only a partial summary of previous energy efficiency programs or instructions is available. The energy-contracting offers are already running in Austria; therefore, firms do not have to invest in energy-related projects with their own resources because the "contractor" is taking the energy-related investment for the company. Even some recommendations are listed in the report to a better acceptance of energy-related venture capital funds and potential success factors of the designed FI.

The previous Upper Austrian High-Tech Fund proved by the high number of funded projects that the construction can successfully decrease the identified capital gap concerning young and innovative technology companies in Upper Austria.

### 2.3.5 Proposed Investment Strategy

Although the report does not provide all the information scored in this criterion, the proposed FI is based on a well developed already running construction.

To illustrate the possible available volume of financing, we only have indirect information. Namely, the partner reports that the scale of ESIF interventions in Austria (EU + national) in the current programming period shows a lower volume compared to previous periods: the ESF interventions reach EUR 875.7 million, the ERDF interventions reach EUR 2.07 billion and EMFF interventions reach EUR 13.9 million. There is an excellent overview in the report on the investments financed by different EU funds over the last decades therefore, we can easily compare the present volume of financing to that of recent programming periods. The report also proves that the previous investment policies were effective; therefore, it is worth to preserve well-performing interventions. The statements are based on analysing a database merging different datasets of separated programs and periods. The most important results are the followings (see partner's report page 37):

- ◆ „No signs of spatial polarisation in Austria during the period of fund interventions (significant difference compared to other European countries!)
- ◆ Economic "accuracy" of ESIF expenditure despite fund-specific differences

- ◆ A positive and significant correlation between ESIF expenditure and the development of the regions supported
- ◆ Noticeable effects on Gross Value Added at the level of the federal states”

Despite the above-mentioned assessment, there are still some missing elements is the description of the FI’s investment policy, especially in the construction of Upper Austrian High Tech Fund. We may conclude that the newly planned fund is designed with participation ratios of 1/3 (participating banks) and 2/3 (Federal Province of Upper Austria or ERDF). Not only the capital structure but also the distribution of profit and loss are characterised by the 1/3 and 2/3 participation ratios.

We also know that equity capital of EUR 250,000 up to EUR 1.5 million will be provided to beneficiaries, but on the size of loans offered there is no available calculation in the report. By detailing the missing information on the construction, on the financial and governance structure of Fund, the proposed FI can attain a higher score in this criterion than the present value.

The proposed FI is either a loan or VC, and both of the constructions incite applicants to launch viable projects. The loan has to be repaid and the VC has an exit date; thus, beneficiaries are interested in the profitability of the project. Especially VC can decrease informational asymmetry as the VC partner usually participates at a predefined measure in the management of the financed firm. All the two firms of FI reflects the longer payback period of innovative high tech projects, thus are the payback terms appropriate even for energy efficiency projects. The report examined the possibility of crowdfunding resources, and VC usually means a transfer of management skills; thus, a kind of consultancy may be incorporated in the construction. That way the innovation of the FI is proved.

The proposed construction is compatible with the applicable state aid rules.

### 2.3.6 Expected results of the Financial Instrument

There are no details given on the total size of the target group, and even the number of approached targets is unknown; however, the number of beneficiaries is given in report “Finalisation of the Ex-Ante assessment analysis and IFI’s implementation in Austria” D.T2.4.2. on page 30 in Table 2. The total number of 410 beneficiaries consists of 10 companies financed by venture capital and of the remaining 400 firms supported by loan products. (The report underlines that the final number of funded projects may not be fully achieved in light of the experience with the previous Upper Austrian Hightech Fund.)

Thus the FI does not focus on energy projects and finances project from more broad range, the energy audit is not a compulsory element of the construction, and there are no estimates on amelioration in figures measuring RES utilization or energy efficiency.

In general, projects meet the aims of FIRECE related only indirectly to energy efficiency. The FI contributes to increasing competitiveness and can create new sources of revenue or increase revenue in target firms. But more special aspects (like decrease in energy expenses) are not fulfilled. Because the proposed FI does not contain a grant element, it does not shorten the payback period of investment.

The results of FI can be evaluated considering the following indicators:

- ◆ Number of new/further developed products and services

- ◆ Number of successful market launches of new and/or further developed products services
- ◆ Number of companies with a successful market launch
- ◆ Total sales of the portfolio companies (of which sales of new products or services)

But due to the heterogeneity of the projects, the partner does not set target values for indicators.

### 2.3.7 Involvement of Stakeholders

The sphere of actions of MA and other authorities are clearly defined and tested in practice. However, more details in the report could be useful for other participants of FIRECE to identify possible transferable good practices to other partner countries. The most important stakeholders of the project are the beneficiaries, the partner banks, the Upper Austrian High-Tech Fund, tech2b (a service provider closely linked to the fund), the Province of Upper Austria. As the proposed FI is a relaunched construction, therefore all the recent stakeholders are implicitly participants of the development process of the present FI to be implemented in the framework of FIRECE project.

### 2.3.8 Transferability

The first question when considering transferability is the assessment of the applied methodology. The partner conducted a desktop research with an appropriate number and quality of references. According to page 9, interviews with experts helped in the design process of the proposed FI. However, unfortunately, we do not find any other information on the interviews only the recommendations of these anonym experts. The report is illustrated with figures and tables, but a more important quantitative research was also part of the ex-ante assessment of FI. The direct effects of the projects supported by the ESI funds are tested with the help of a funding database, which was built upon the basis of data provided by the funding institutions. Using model ASCIANO, a multi-regional and multisectoral economic model for Austria and its provinces the quantitative analysis finally conclude how the interventions of recent EU programs contributed to (regional) gross value added (and gross regional product), investments and employment. There is not the whole analysis available only the main conclusions already listed above in the assessment of investment strategy.

The report also overviewed some related foreign good practices, see the comparison of the effect of the Bavarian ERDF co-financed venture capital funds (S-Refit ERDF Fund, BayBG Fund, Cluster Fund ERDF) or of the Berlin ERDF co-financed VC funds.

If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. Because the VC usually means involvement of the financed firm's management, a knowledge base of financing, launching or evaluating high-tech projects in general or energy efficiency projects in particular can be created in the framework of FIRECE project. The know-how and the construction itself can be transferable not only to other regions of Austria but also to other countries where the level of economic

development allows to find start-ups or firms innovative enough to apply for VC and to be financed by more innovative and progressive financial products than loans or grants.

### 3. Evaluation of the Ex-Ante Assessment Hungary, South Transdanubian Regional Innovation Agency

The Hungarian partner in FIRECE is the South Transdanubian Regional Innovation Agency. The evaluation of the designed innovative FI is based on the report „Innovative Financial Instruments for industry low carbon energy transition in Central Europe. Finalisation of the Innovative Financial Instrument in Hungary” D.T2.4.6.

#### 3.1 Summary of the Proposed Financial Instrument

The Hungarian partner designed an innovative two-component FI which targets every SME in Hungary. In component 'A' an energy audit will be prepared to every beneficiary company as an indirect subvention. In component 'B', all audited SMEs can apply for a combined financial solution. The financing is composed of grant and state-supported credit facilities. Component 'A' will audit 300 SMEs in the first phase of the project, and component 'B' will support 250 of investment projects. The total volume of financing is 4.0 billion HUF for component 'A' and 25.0 billion HUF for component 'B'.

#### 3.2 Quantitative Evaluation

Table 2: Quantitative evaluation of Hungary's FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
<b>1. Scope of the assessed financial instrument</b>		<b>10</b>	<b>9</b>
1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	2
1.3	What kind of projects can be financed by the designed FI?	2	1
(1.4)	Can the financial needs of the target group be satisfied by existing financial	2	2

	products and subsidy programs for financing?		
(1.5)	Novelty of FI regarding target group or supported activity	2	2
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>9</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	1
2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1
(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1
(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	4
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>9</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)	2	2
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	1
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fond or managing	3	3

	authority) (1-1 for each mentioned program, max.3)		
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	3
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>13</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	5
4.2	Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	3
4.3	Does the report explicitly identify failures of previous financing opportunities? (0 - no, 1 - short overview, 2 - detailed analysis)	2	2
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 - no, 1 - yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 - no, 1 - general, qualitative information, 2 - demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>8</b>
5.1	The total volume of financial subvention (0 - not given, 1 - given, 2 - given and explained)	2	1
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 - no, 1 - yes)  Does the FI deal with informational asymmetry, and can the proposed	2	2

	construction contribute to decreasing credit rationing? (0 - no, 1 - yes)		
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 - no or not assessed, 1 - yes, explained)	1	1
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	2
(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 - no, 2 - yes)	2	2
<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>14</b>
6.1	Number of approached agents of the target group (0 - no information, 1 - information on the total size of the target group, 2 - information on the approached targets)	2	2
6.2	Number of supported beneficiaries (0 - no information, 1 - given, 2 - estimated or explained)	2	2
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	5
(6.4)	Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):  Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?  Does the project create new sources of revenue for beneficiaries/increase revenue?	4	3



(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	2
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>13</b>
7.1	Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and their relation to the project is also defined)	2	2
7.2	Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially, 2 – principles of cooperation as well, 3 – entirely)	3	3
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	3
(7.4)	Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)	5	5
<b>8. Transferability</b>		<b>15</b>	<b>14</b>
8.1	Are the results of the study based on qualitative research? (1-6: 1 – only desktop research with less than 5 external citations, 2 – desktop research with 5-15 external references, 3 – desktop research with more than 15 external references, +1 – interviews with experts, +1 – workshops, +1- any other kind of qualitative research)	6	6
8.2	Are the findings of the study based on quantitative research? (0 – no quantitative methodology, 1 – survey with a sample size less than 50 or without any information on sample size , 2 – survey with a sample size larger	3	2

	than 50, 3 – survey with a representative sample)		
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 - detailed)	2	2
(8.4)	Will the construction provide a knowledge base transferable to other regions? (0 - no; 1 - partially, 2 - entirely)	2	2
(8.5)	Will the construction provide a knowledge base transferable to other member states? (0 - no; 1 - partially, 2 - entirely)	2	2
<b>TOTAL SCORE</b>		<b>100</b>	<b>89</b>

Source: own table

### 3.3 Summary of the evaluation areas and justification

The rather high score of the proposed FI is due to the innovative audit element of the construction which lightens the administrative burdens of applicants and the managing authority at the same time. Component 'A' is an adequate answer to the lack of information on energy related issues among SMEs. At the same time, it creates a unique knowledge base which can disseminate relevant experiences to other countries.

The other relevant element obtaining a high score of Hungarian FI is the combination of grant and loan. At the present level of economic and financial market's development, combined products can best overcome the difficulties of applicants with their own contribution.

The detailed assessment applied an exigent methodology, both qualitative and quantitative one, which also contributed to high scores of the FI.

#### 3.3.1 Scope of the Assessed Financial Instrument

The overall goal of the FIRECE project is to establish innovative financial solutions to facilitate the transition to low carbon emission among small and medium-sized enterprises. According to the assessment of the Hungarian market, the appropriate strategy is to cover the highest number of targets possible. The proposed FI targets every SME in Hungary. The number of small and medium enterprises is 718 000, which includes 99% of all companies.

To successfully assess businesses, targets were divided into two categories: SMEs were labelled as climate-friendly technology providers and general SMEs. But based on a multi-criteria analysis, the partner decided not to launch FI especially designed for climate-friendly SMEs. However, higher efficiency of FIRECE can be reached in the case of the largest possible target group. Project size is depending on the results of the energy audit implemented under component 'A'.

Beneficiaries obtain financing for energy efficiency and advanced energy technology adaption purposes. The main goal is to reach optimal operation with the lowest energy consumption possible and maximise the energy efficiency of buildings and facilities.

FIRECE project aims to narrow lack of financing in the present Hungarian market. Preliminary market research took place in the Hungarian energy sector. Several market failures have been identified and analysed, but the most pressing problems are the following:

- ◆ Lack of information: firms usually have no information on their energy consumption.
- ◆ Lack of financial support: energy efficiency projects or developing climate-friendly companies face insufficient financial background.

It is an explicit aim of the designed FI to reach SMEs outside of the already supported group of firms. The grant scheme should address companies that have not been present in the field of applications and have never been granted any public aid. The expert pool of Component A shall approach those companies, which are invisible to the Management Authorities. But at the same time, the report allows finding potential beneficiary companies among the beneficiaries of ongoing operation programmes, beneficiaries of transnational and cross-border programmes, businesses registered in different thematic chambers or association. Concerning the novelty of financed activity, the due diligence part of the project is an innovative element of the construction.

### 3.3.2 Value Added of the Financial Instrument

The added value (VA) of the FI can appear when partners design solutions which are maximizing the added value while minimizing the risk of related negative phenomena.

The added value can be interpreted in several ways. The financial results of FI are primarily the multiplier and the leverage effect. The report compares two constructions: the repayable and the fixed interest rate supported FI by an illustrative calculation of leverage and value added. The FI contains a revolving loan element which contributes to the value added by increasing the number of funded projects and the total amount of investment till and after the end of the program.

Compared to the financial, quantitative effects, the qualitative dimension of value added consist of broad socio-economic consequences. The report contains a detailed qualitative analysis of the value added. The partner listed the following consequences of the FI as value creating:

- ◆ SMEs of Central Hungary have been excluded from several programs during the recent programming period, but the proposed FI approaches that region as well.
- ◆ Under component 'A' the consortium of experts can approach those companies, which are invisible for the Management Authorities.
- ◆ The partner reported a significant market gap and the proposed financial product decreases the gap but is not distorting the competition.
- ◆ Component 'A' lightens the administrative tasks of the Management Authorities (MA) because in component 'B' already audited projects apply for financing. This supports the workflow of MA in the followings:
  - Projects meet a standard high quality (component A)
  - Very high expected rate of submitted/ implemented project proposals
  - The loan element of FI filters project proposals, which are less likely to be financially viable in the long run. According to market experiences, repayment task creates a strong incentive power to start only viable projects.
- ◆ Synergy: The expert pool will possess a unique knowledge base for energy efficient investments, which contributes to disseminating good practices and innovation among all partners.

Since the FI will be launched in the programming period 2021-2027, a real consistency assessment cannot be carried out because the other forms of interventions are not yet known, the report discusses the consistency of FI with programming period 2013-2020.

An important value driver of a FI is how it lowers barriers to entry for applicants. Services of component 'A' give an adequate answer to lack of management skills of Hungarian SMEs. A simplified application and a shorter approval process for all audited firms under component 'A' lighten the administrative tasks of future beneficiaries. The grant element respects the limited own contribution capacities of applicants, while preferential loan decreases the burdens of debt service.

### 3.3.3 Assessment of the Additional Resources

The report provides a short overview of external resources available for companies in general. Public grants, loans, equity finance and credit guarantees compose the financial background for companies applying for external financing.

Since energy efficiency projects have exact cost-benefit parameters, the profitability of projects can be judged, which enables them to apply for private financial resources. Three possible financial solutions are mentioned:

- ◆ ESCO model (ESCO: Energy Saving Company)
- ◆ Green bond
- ◆ Community finance

Although there is no estimate on the available volume of financing opportunities on the market, the potential leverage achieved by additional resources is mentioned in the report.

### 3.3.4 Incorporation of Previous Experiences

The success of FIRECE's goals depends on the ability of FI to meet the special needs of the SME sector, particularly those emerging from the specialities of energy efficiency investments. The first step in this kind of design process is to collect all the relevant previous experiences.

The report contains an overview of existing funding opportunities. First, we can read a detailed description of FIs in the 2007-2013 programming period. Credit programs like New Hungary working capital loan, New Hungary SME loan, New Hungary microcredit, New Széchenyi credit etc. (listed in Table 2. in partner's report), provided a total volume of financing 141.3 billion HUF. Two guarantee programs (Portfolio Guarantee Program (New Hungary Portfolio Guarantee Program and New Széchenyi Credit Guarantee Program)) took place in this period offering a total of 30 billion HUF guarantee. In the 2007-2013 programming period, two types of capital programs were created at the expense of the structural funds: the JEREMIE capital program and the Széchenyi Venture Capital Fund.

A short assessment of the 2014-2020 programming period is also available in the report, where the partner has already followed a focus on energy efficiency issues. According to these findings, several financial instruments are available for SMEs with different objectives; however, it was found that supported loans are not available for the targeted SMEs for energy efficiency related investments. The following interventions of the programming period can have relevance in energy efficiency: SME Energy loan, Venture-capital programme for National Technology and Intellectual Property, Venture-capital programme for smart specialisation, Supported investment loan for the development of New Generation NGA and backhaul networks, Specialised seed and pre-seed private equity fund for ICT start-ups, Venture Capital Fund.

With the overview of existing financial opportunities, the report assessed possible market gap. It also explicitly identifies failures of previous financing opportunities. Generally, financial instruments are usually less popular than grant programs. More precisely "changing the parameters of financial programs has less impact on demand, it is more significant whether there is a grant for the same purpose or a grant is linked to the financial product." (Report, page 11) Empirical data shows that the demand for financial instruments increased by 30-40% only after grants had been exhausted.

If grants are not available, combined products (grant and loan) are more popular than loans. The grant element contributes to the high support content while allowing freedom of use. If there exist no combined products for a given purpose, then grant beneficiaries should also be encouraged to create this combination of grant and public financial instrument (if the rules of the constructions allow accumulation and double financing).

But not only can the form of financing but also additional terms of an FI limit the demand. According to the partner's findings, „there is a consensus among experts that financial instruments can be more attractive if the purpose of use and reporting obligations are "freer" than the administrative constraints of non-repayable grants." (Report, page 14)

The proposed FI reflects all these findings. It is a combined product, component 'A' lightens several ways the burdens of applicants during not only the application process but also the implementation phase.

### 3.3.5 Proposed Investment Strategy

The partner designed five different constructions and compared them based on multi-criteria analysis. The competing versions for the FI were as follows:

- ◆ The first FI is targeting every Hungarian SME and provides grants from operational programmes combined with state supported loans, which serve as direct financial support for energy efficiency investments.
- ◆ The second FI is targeting climate-friendly companies with direct finance solutions, combining state funds with private capital.
- ◆ The third FI is targeting every Hungarian SME but with a two-component financing model.
- ◆ The fourth FI is targeting climate-friendly small and medium enterprises with a two-component fund.
- ◆ The fifth FI is targeting climate-friendly small and medium enterprises with equity finance.

The analysis is based on two steps. First, possible financing forms were compared based on the following aspects:

- ◆ Expectation on return
- ◆ Popularity in the Hungarian market
- ◆ Administrative burden
- ◆ Revolving capacity
- ◆ Leverage effect
- ◆ The available amount of funds on the market

Comparing grants, subsidised loans, equity finance and guaranties, the combinations of the first two appeared to be the most effective.

As a second step, the five proposed constructions were analysed. The multi-criteria model focused on the following aspects:

- ◆ Potential number of beneficiaries
- ◆ Generated additional investments
- ◆ Effectiveness of the investment
- ◆ Business incubation capacity

The multi-criteria analysis showed the potential in the two-component fund, which enhances the energy efficiency of every SME.

To better understand why FI is an innovative proposition, let us overview the two-component financing model! In component 'A' is free for supported companies. For every beneficiary company, an energy audit will be prepared as an indirect subvention, including the followings:

- ◆ The potential energy return on investment
- ◆ Market analysis
- ◆ Identifying potential partners, supporters
- ◆ Legal obstacles and framework
- ◆ Cost-benefit analysis
- ◆ Scalability of the product/service

As a result, energy related parameters of the company will be identified, a financial audit will be prepared, and energy intervention options will be explored. Under component 'B' companies audited in component 'A' can apply for financing to implement the identified investment opportunities. The financing is composed of grant and state-supported credit facilities.

The total volume of financial subvention is divided between the two components. Component 'A' needs a total financing volume of 4.0 billion HUF, which cover the costs of the auditors. The auditor will provide consultancy services for 300 SMEs. The resources of the 2021-2027 operation programme can fund the component 'A'. Component B providing grant and loan instruments to 250 SMEs' needs, a total volume of financing of 25.0 billion HUF. An energy fund is to be created which is built on various sources from operation programmes to private capital.

Credit rationing, which usually at all the partners' financial markets appears, can be decreased if the proposed FI contains incentives for applicants to launch only viable projects and the FI deal with informational asymmetry. Component 'A' helps both of these aspects by the due diligence service, which creates a wide knowledge base at the auditor consortium.

The proposed construction is compatible with the applicable state aid rules. The report contains a detailed description of state aid regulation, on different state aid schemes in Hungary and finally an analysis of how the proposed FI should be designed to meet the requirements of state aid regulation.

The FI reflects a longer payback period of energy efficiency projects. Financial innovations of the proposed construction are ex-ante consultancy services and consultancy during the implementation of the project.

### 3.3.6 Expected results of the Financial Instrument

The designed FI will be part of interventions in the next, 2021-2027 programming period. The time frame of the projects is divided into two phases. Component 'A' consist of the audit phase and component 'B' focuses on the investment of energy efficiency projects. These two components need at least two years. Thus the first project would not be initiated before 2022. After the finalization of the investment, the results and equipment should be maintained for at least three years.

Since result indicators are measuring how the funded projects contributed to the aims of FIRECE project, appropriate design and selection of clear and measurable result indicators are crucial. On the one hand, the result indicators must be clearly interpretable, statistically validated. But on the other hand, the designed FI should be an appropriate tool to improve the value of the selected result indicator.

The first group of expected results are the financial results of the project. Partially these results have been already covered under criterion „Proposed investment strategy“. In the partner's report, Table 13 contains the following financial results of proposed FI:

- ◆ Number of granted companies
- ◆ Number of granted companies receiving other than non-repayable grants

The target value of both indicators is estimated to reach 250 companies.

Thus FIRECE has a focus on energy efficiency; the other group of indicators are measuring the improvement of energy related issues. Table 13 and 14 of the partner's report propose the followings:

- ◆ Decrease in greenhouse gases per year measured in tonne of CO2 equivalent
- ◆ Decrease in primer energy consumption in the buildings of companies measured in kWh/year
- ◆ Decrease in primer energy consumption after energy-efficiency interventions measured in PJ/year
- ◆ Amount of energy gained from renewable energy sources measured in PJ/year

The partner does not set target values for energy related indicators; they should be estimated in future feasibility studies.

The designed FI attained a rather high score for the criterion of expected results. On the number of approached agents of the target group we also have information: the total size of the target group – the whole SME sector consists of 718 000 companies, and the approached agents will be selected through the consortium. The group of supported beneficiaries consists of 300 firms under component 'A' and component 'B' finances only 250 of them.

Estimated results of projects are clearly defined as already described above. Projects of beneficiaries financed by FIRECE can decrease energy expenses and increase competitiveness. Since the project has a grant element, this shortens the payback period of the investment. The energy audit is a compulsory element of the subsidy program. Even new sources of revenue for beneficiaries or an increase in revenue can be created if the project contributes to implementing energy generating technologies.



### 3.3.7 Involvement of Stakeholders

The report identifies the most important stakeholders, and their relation to the project is also defined. There are detailed propositions provided on the sphere of actions of MA and other authorities. The short summary of the roles of different stakeholders in the project is as follows.

The target group and the beneficiaries of the project are Hungarian SMEs.

Component 'A' will be operated via a consortium, selected through a call for proposal. Under component 'A' the consortium has the responsibility to provide due diligence services to at least 300 companies, ensuring nation-wide coverage and avoiding geographic concentration. Also, the methodology and framework of the assessment have to be developed by the consortium. Considering the widespread tasks of the consortium is based on the cooperation of different professionals in various areas from engineering to economy.

The management authority operates Component 'B'. As due diligence and the Energy Road Map already insures the consistency, financial and technological viability of the projects, all audited SMEs after component 'A' can apply for component 'B'. Therefore, MA does not have to evaluate the applicants; all the candidates will be financed under component 'B'. Only elements listed in the energy audit may get financing. Thus it will be the responsibility of the Management Authority to select the eligible applications by taking account of the economic and technological aspects of the project ideas monitoring and reporting requirements should be defined by the Managing Authority and by the manager of the fund. MA should also report to Commission how the requirements of the state aid regulation are met. MA and fund manager are subordinated to the Ministry of Finance.

The partner insured a high level of involvement for stakeholders in the preliminary stage of the project. The FI was adjusted according to the result of two stakeholder meetings, and a meeting with the relevant department of the Ministry of Finance. To understand the needs and limits of the target group, a workshop for stakeholders from the beneficiary side and a workshop for stakeholders from the supporter side have been organised.

### 3.3.8 Transferability

The first question when considering transferability is the assessment of the applied methodology. The partner conducted a desktop research with an appropriate number and quality of references. According to page 14 of the partner's report, as primary research, experts from the relevant department of the Ministry of Finance were interviewed to help in the design process of the proposed FI. As already mentioned in the previous criterion (involvement of stakeholders), a workshop for stakeholders from the beneficiary side and a workshop for stakeholders from the supporter side has been organised to understand the needs and limits of the target group. Case studies also helped to map the needs and challenges of SMEs regarding energy efficiency.

As 99% of all companies belong to the SME sector, and most of them are either micro- or small-sized businesses, an extraordinarily fragmented market structure appeared in Hungary. To successfully assess businesses, they were divided into two categories: SMEs were labelled as climate-friendly technology providers and general SMEs. According to the report (see page 15), quantitative methods and case studies helped to understand both of the groups of SMEs better.

The report also overviewed some related foreign good practices. It focused on existing instruments already in effect, with the same objective as defined in FIRECE. The Italian and Czech model elaborated within FIRECE have been analysed to identify good practices, margins of error and inefficient approaches, both regarding the project implementation and the operational background.

If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. As the proposed FI covers the whole Hungarian market, the transfer among regions is indirectly assured. The know-how and the construction itself can be transferable to other countries. The knowledge base, which is created under component 'A' during the consultancy services provided by the consortium of professionals to potential beneficiaries, is an important result of FIRECE project. It not only allows better to understand the needs and limits of Hungarian SMEs and to develop the most suitable interventions in the future to them, but also offers a well-defined basis for FI and product design in foreign countries which are at the same level of economic development.

## 4. Evaluation of the Ex-Ante Assessment PP3 Emilia – Romagna Region (ERR), Italy

The Italian partner in FIRECE is PP3 Emilia - Romagna Region (ERR). The evaluation of the designed innovative FI is based on the report „D.T2.4.5 - FINALISATION OF THE INNOVATIVE FINANCIAL INSTRUMENT IN EMILIA-ROMAGNA REGION”.

### 4.1 Summary of the Proposed Financial Instrument

The Italian partner designed an innovative construction combined from a loan Instrument and a guarantee instrument. As a third part of the construction, a technical assistance unit helps beneficiaries to improve their project quality and reduce project risk.

The loan element aims to promote the creation of new businesses and the growth of SMEs, the EE processes in enterprises (including SMEs) and self-production of energy from RES to increase their competitiveness. FI should also encourage business investment in industrial research programmes. The Guarantee Fund has the aim to support the access to credit, through guarantee interventions of companies to support their diversification, growth and internationalization paths.

Final beneficiaries of the loan instrument are enterprises, SMEs, area companies, production area managers and ESCos. The guarantee elements target SMEs, ESCo including, individually or in an association, professionals and their associations.

The loan element will consist of initial public funding of EUR 26.6 million increased by the tranche for outright grant assistance to final recipients and the tranche for interest rate subsidy. For the guarantee fund, there is a total budget of EUR 35 million available. Finally, the Technical assistance unit disposes of a capital of EUR 10 million, which equals approximately 4-10% of the final investment supported.

## 4.2 Quantitative Evaluation

Table 3: Quantitative evaluation of PP3 Emilia-Romagna Region's FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
<b>1. Scope of the assessed financial instrument</b>		<b>10</b>	
1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1
1.3	What kind of projects can be financed by the designed FI?	2	1
(1.4)	Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2
(1.5)	Novelty of FI regarding target group or supported activity	2	2
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>9</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	2
2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total	1	1

	amount of investment till and after the end of the program?		
(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1
(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	3
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>9</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)	2	2
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	2
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fond or managing authority) (1-1 for each mentioned program, max.3)	3	1
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	1
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>12</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	2

4.2	Does the report contain an overview on previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	5
4.3	Does the report explicitly identify failures of previous financing opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)	2	2
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>10</b>
5.1	The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)	2	2
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes)  Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)	2	2
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)	1	1
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	3
(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2

<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>10</b>
6.1	Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)	2	0
6.2	Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)	2	0
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	5
(6.4)	Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):  Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?  Does the project create new sources of revenue for beneficiaries/increase revenue?	4	3
(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	2
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>12</b>
7.1	Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and their relation to the project is also defined)	2	2
7.2	Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially,	3	3

	2 – principles of cooperation as well, 3 – entirely)		
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	2
(7.4)	Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)	5	5
<b>8. Transferability</b>		<b>15</b>	<b>11</b>
8.1	Are the results of the study based on qualitative research? (0-6: 0 – only desktop research with less than 5 external citations, 1 – desktop research with 5-15 external references, 2 – desktop research with more than 15 external references, +1 – interviews with experts, +1 – workshops, +1- any other kind of qualitative research)	6	3
8.2	Are the findings of the study based on quantitative research? (0 – no quantitative methodology, 1 – survey with a sample size less than 50 or without any information on sample size , 2 – survey with a sample size larger than 50, 3 – survey with a representative sample)	3	2
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 – detailed)	2	2
(8.4)	Will the construction provide a knowledge base transferable to other regions? (0 – no; 1 – partially, 2 – entirely)	2	2
(8.5)	Will the construction provide a knowledge base transferable to other	2	2

	member states? (0 – no; 1 – partially, 2 – entirely)		
<b>TOTAL SCORE</b>		<b>100</b>	<b>81</b>

Source: own table

## 4.3 Summary of the evaluation areas and justification

The designed FI of Region Emilia Romagna is an innovative well suitable instrument which can be able to narrow the financial gap explored on the market. Therefore the criterion like assessing value added or presenting the investment strategy and recent experiences attained (nearly) the maximum score. But the relatively short extent of the report limits the quantity of information available. Usually, that lack of information leads to the moderate score in expected results or in transferability. The questions under each evaluation criteria can provide a good base to find at which points the partner can improve the report.

### 4.3.1 Scope of the Assessed Financial Instrument

The scope of the proposed FI is not limited to energy efficiency and utilization of RES which goals are closely related to the competitiveness of beneficiaries. The FI also aims to promote the creation of new businesses and the growth of SMEs and to encourage business investment in industrial research programmes.

Final beneficiaries of the loan instrument are enterprises, SMEs, area companies, production area managers and ESCos. In contrast, in the case of the guarantee fund, a wider range of beneficiaries is proposed, namely SMEs, ESCo including, individually or in an association, professionals and their associations. However, there are beneficiaries already experienced in energy efficiency projects; the FI does not offer them different terms than to other applicants.

The size of the funding and even there is a financing channel to be considered which is differentiated according to the size of applicants.

The proposed structure is composed of three elements:

- ◆ Loan Instrument
- ◆ Guarantee Fund
- ◆ Technical assistance

The technical assistance unit helps to overcome the lack of funds for energy audits. The proposition is an innovative solution to unwind the difficulties in defining self-sustainable investments which are often related to the weaknesses of the technological design of projects. But there are still other novelties in the proposed FI, the possibility of using crowdfunding as a loan instrument and the potential use of EPC (Energy Performance Contracts).

The innovative elements help to design a „well-tailored“ FI to cover the needs of the target group. However, there are numerous financial products and programs available; there



have been several market failures which result in credit rationing. Thus, there is a financial gap which has to be widened by the designed FI. (The market failures are more discussed in the assessment of criterion Incorporation of Previous Experiences.)

### 4.3.2 Value Added of the Financial Instrument

The qualitative analysis of the value added covers some innovative aspects compared to other reports of the FIRECE projects. The general value creation ability of an FI is identified in the following factors:

- ◆ The multiplier effect on EIF Funds: the FI can attract public and private resources in different forms and combine them to achieve the goals of the FI. The revolving characteristic contributes to the long term sustainability of programs.
- ◆ Possibility to combine Financial Instruments with non-repayable resources: Grant elements can preserve the interest of beneficiaries in the success of the project. This is the case, especially when a project does not generate cash flow high enough to cover debt service and to leave an appropriate portion of the cash flow at to entrepreneur to incite him to provide high efforts in favour of the project's success (see moral hazard) at the same time.
- ◆ Support to final beneficiaries in the form of non-repayable technical assistance to final beneficiaries.
- ◆ Possibility to contribute to the Financial Instrument with additional resources.
- ◆ Incentive power of repayable FIs: decrease of moral hazard and empowerment of the final beneficiaries.
- ◆ Interventions with lower aid intensities distort less market and competition than the non-repayable grants.

The added value is assessed by the Italian partner also from the point of view of FIRECE goals.

- ◆ FI overcomes the lack of funds for energy audits and therefore helps to design high quality and self-sustainable projects. The riskiness of projects is also decreased by the technical assistance element of the FI.
- ◆ Applicants with smaller project size also have access to the FI, and there is a simplified financing channel provided for them.
- ◆ The Financial Debt Instruments can reduce risk by harmonizing the durations of financing with the payback time of energy efficiency measures.
- ◆ As an output of the FIRECE project, standard contracts and management models can be defined, which allocate risks between the company and ESCo.
- ◆ Successful cases can promote the topic of potential energy savings resulting from investments in energy efficiency among companies who have access to appropriate FIs to finance such investment projects.
- ◆ The strategy to offer guarantees for investments with too long payback time and to offer FIs for cash flow generating projects avoids the overlap between grants and other financial instruments.

The leverage and the multiplicative effect as the quantitative value added of the FI are discussed in the report. First, the potential leverage effects of different financial solutions

are explained. According to the results, equity-based products can achieve leverage of 20, which means that 5 million EUR of public funds can become finally active investment in a total volume of 100 million EUR. The leverage effect of loan programs is estimated to equal 10-15. The guarantee can create an investment 6.25-10 times higher than the amount of the guarantee itself.

Considering the above-mentioned results, the partner proposed an FI consisting of a loan plus guarantee instrument supported by a technical assistance element. The calculated multiplicative effect of the guarantee element equals a multiplier of 2.5, assuming that the guarantee covers 50% of credits. For the microcredit instrument, the potential leverage effect is moderate. A leverage effect of approximately 1.25 can be achieved.

The proposed FI is consistent with other forms of interventions and measures in the region. Because its construction derives from a focused assessment market failures and imperfections, it sets lower barriers to entry for applicants than other existing financial products available on the market.

### 4.3.3 Assessment of the Additional Resources

In the assessment of additional resources, the report focuses not only on the resources but also on the methodology and possible technical solutions how these financial sources can be channelled to the proposed construction.

The leverage effect of product types is deeply assessed and explained. The additional resources that can be attracted by the Financial Instruments can be public or more frequently private resources. The leverage that can be activated can generate a multiplier of up to 20x, depending on the instrument that is created and the market and project conditions. Equity products are able to achieve the multiplier effect of 20; the debt instruments can attract 10-15 times higher volume of additional resources than the initial volume of the debt instrument. The guarantee can create leverage of 6.25-10.

Potential public resources to be attracted by the FI can come from the following institutions:

- ◆ European Commission;
- ◆ Transnational organisations (EBI, EFI);
- ◆ Ministers (with direct resources and through National Operative Programs);
- ◆ Other public bodies or public purpose entities.

The report considers all possible sources where can additional public sources come from:

- ◆ Repayments resulting from existing Financial Instruments: the report contains an estimate of EUR 17 million, which can contribute to the new FI.
- ◆ Resources made available by other public entities or for public purposes (provinces, CCIAAA, foundations).
- ◆ European resources.

Two type of actors can provide private resources identified in the report:

- ◆ Credit institutions usually provide debt instruments of which the actual construction is depending on the characteristics and riskiness of the project.

- ◆ Financial investors provide equity, mezzanine or debt (structured bonds) products. Individual financial investors are business angels, or structured ones are investment funds.

Innovative sources of additional financing can be the different forms of crowdfunding. The report assesses the possibility and applicability of crowdfunding in FIRECE project. The conclusion is that crowdfunding is a promising tool in financing renewable energy projects. The crowdfunding model has been attracting a number of important companies in the renewable energy market; several European and Italian entrepreneurs relied on crowdfunding to fund their energy related investments. An added value of successful crowdfunding campaigns is the increased visibility - and the rating - of the financed company on the national and international level.

Several public programs or private products are mentioned in the report, see Reggio Emilia has funded the RE UP project which has supported business start-ups, or there is the Equity Facility for Growth of the COSME programme, and the Loan Guarantee Facility is also available.

#### 4.3.4 Incorporation of Previous Experiences

The report provides an overview of available public programs for SMEs, on the financial markets of Italy and the energy utilization of firms.

The report informs us that the Emilia Romagna region has implemented several actions in the field of in Axis 4 of the ERDF ROP during the last programming period 2014-2020, and these actions had the aim to support investments serving the transition to a low carbon economy in all sectors; however, there are only Central Guarantee Fund (financed by the Ministry of Economic Development) and JESSICA (Regione Sardegna) mentioned. The general effect of these programs is known, according to the report within Axis 4, an amount of approximately 10 million Euros were activated to support investments by companies aimed at energy efficiency, the production of energy from renewable sources and the construction of technological systems that allow the reduction of energy consumption from traditional sources.

Previous energy related programs and some good practices are discussed. The following constructions are mentioned:

- ◆ Italian White Certificates (WhC, which is an Energy Efficiency Obligation (EEO) scheme),
- ◆ National Fund for Energy Efficiency (FNEE),
- ◆ Fondo Energia (Regione Emilia Romagna),
- ◆ StartER – Regione Emilia Romagna,
- ◆ POIN Energia: renewables and energy saving.

The existing financial opportunities have been insufficient, and the partner identified several market failures in the assessment. Despite the wide and diversified offer of existing financial instruments/products (private and public), the following problems were explored: very strict project evaluation and selection criteria, information asymmetries, mismatching in the timing of disbursement, business culture, misalignments in planning, governance problems. The proposed FI offers a suitable solution to most of these failures. The market gap is not estimated; however, a detailed analysis is part of the report on this topic. The most important statements are:

- ◆ The bank credit market: the availability of credit is still a problem today; however, the cost of credit has fallen sharply in recent years. But the costs for SMEs have relatively risen because the rate differential between large and small enterprises has widened.
- ◆ The guarantee system is historically a very strong and well-structured market segment in Italy. In Emilia Romagna, the Central Guarantee Fund managed to increase the percentage of funding coverage.
- ◆ The equity market has a limited role in Italy.
- ◆ Energy costs in Italy are 20-30% higher for an SME than the European average, even if the energy costs of a company is an important determinant of competitiveness. That is a reason why the goal is to promote process and product innovations that allow reducing the energy bill of companies is of high priority.

### 4.3.5 Proposed Investment Strategy

Among the collected previous experiences, the experience of the Energia and StartER funds in Emilia-Romagna provides the most important conceptual input to the designed FI.

The structure of the FI is composed of three elements:

- ◆ Loan Instrument
- ◆ Guarantee Fund
- ◆ Technical assistance

The Loan Instrument has broader goals than FIRECE projects. It aims to promote the creation of new businesses and the growth of SMEs, the EE processes in enterprises (including SMEs) and self-production of energy from RES to increase their competitiveness. FI should encourage business investment in industrial research programmes. Final beneficiaries of the loan instrument are enterprises, SMEs, area companies, production area managers and ESCos. It will consist of initial public funding of EUR 26.6 million increased by the tranche for outright grant assistance to final recipients and the tranche for interest rate subsidy. Under the form of a loan instrument, two constructions are offered:

- ◆ a microcredit compartment financing projects of up to 25,000 Euros,
- ◆ a mixed compartment financing projects of more than 25,000 Euros, including a non-repayable grant to cover the financing costs (interest subsidy) and grant for assistance to final recipients.

The Guarantee Fund has the aim to support the access to credit, through guarantee interventions of companies to support their diversification, growth and internationalization paths. The guarantee elements target SMEs, ESCo including, individually or in an association, professionals and their associations. There is a total budget of EUR 35 million available to the guarantee fund. If we assume that the guarantee covers 50% of credits, even a multiplier of 2.5x can be achieved. (1 EUR of guarantee can activate 2.5 EUR of new credit.)

Finally, the Technical assistance unit disposes of a capital of EUR 10 million, which equals approximately 4-10% of the final investment supported. This assistance should be provided in the form of non-repayable financing, to incentivise the analyses and therefore the quality of the interventions.

The report examines which aspects of the regulation on state aid should be respected. (See the citation in the report: *"The combination of support provided through grants (capital grants), interest rate subsidies and guarantee fee subsidies, including technical support, and Financial Instruments may take place in the same operation or in two different operations"* (Art. 37 of the CPR). The structure of the FI follows the directive mentioned above.

The FI reflects the longer payback period of energy efficiency and RES projects; however, there is no detailed information in the report on the repayment terms of the loan element.

The proposed investment strategy is innovative, it not only contains the so-called technical assistance unit for consultancy purposes to help to improve beneficiaries project quality, but the report also assesses the possibility of using Energy Performance Contracts (EPC). It also proposes crowdfunding loans as one possibility for the loan element of the construction. The loan element plus the consultancy service of the technical assistance unit together helps to decrease the informational asymmetry between the participants; thus, it contributes to the reduction of credit rationing.

#### 4.3.6 Expected results of the Financial Instrument

However, the designed FI is an innovative proposition for the FIRECE project; there is no detailed information on the expected results of the FI in the report. An extension of the description of expected results would be needed to improve the assessment of the proposed instrument.

There is not any information on the number of potential applicants, on the number of supported beneficiaries, and also the size of the target group is missing.

Because an energy audit is a compulsory element of the FI assured by the technical assistance element of the construction, the quality of the supported projects and a significant improvement in energy related indicators is granted.

The financial results of the project are similar to those of other partners. Through the financed projects, a decrease in energy expenses of beneficiaries is to be expected which contributes at the same time to an increase in the competitiveness of these firms. There is a possibility of a grant in the construction which has the advantage of shortening the payback period of the investment. In the chapter 7.1.4. "Conclusions on lessons learned", we can read the following advice: "the obligation to self-consume the energy produced with the equipment financed by the Fund can affect negatively the quality of the projects". Considering this statement, we can assume that the FI will create the opportunity to sell the produced energy; thus, an increase in revenues of beneficiaries is also expected.

### 4.3.7 Involvement of Stakeholders

The report provides an overview of stakeholders in FIRECE project with a focus on possible implementation methods and the related responsibilities, allocation of tasks. The sphere of actions of MA and different actors are precisely defined.

Several scenarios are assessed, which are developed in accordance with art. 38 of Regulation n. 1303/2013., which is regulating the implementation of FIs. As a conclusion of the summary available in the report, the main tasks of the MA and the Entrusted Body consist of the following elements.

Tasks of the Managing Authority are:

- ◆ MA defines the investment and implementation strategy;
- ◆ MA takes all measures necessary for the implementation of the Fund, including those relating to the certification of expenditure;
- ◆ MA decides on the admission of applications for funding based on the investigations submitted by the Entrusted Body.

The MA has the task as the above list illustrates to entrust implementation tasks to a body governed by public or private law.

Tasks of the Entrusted Body are:

- ◆ The Entrusted Body selects recipients through the publication of public notices;
- ◆ It provides facilities and manages debt collection;
- ◆ It manages the portfolio of companies benefiting from the Fund's contributions;
- ◆ It monitors and controls the contributions made to the Fund;
- ◆ The Entrusted Body informs the MA and reports on the progress of operations;
- ◆ It reports direct costs and related expenses for the activities for which it is responsible;
- ◆ It provides beneficiaries with assistance services during the implementation phase of the Fund's programme investments, if any.

The MA can entrust the management tasks of the Fund(s) to one or more specialised dedicated bodies. But the entrusted body has to meet some economic, financial and technical requirements, which can ensure the ability to manage its tasks. But there are some additional aspects regarding structured organizational coordination of tasks and responsibilities which are listed in the report (see page 29.).

An important proposition is that in the implementation phase of FI there should be an extended number of financial bodies. (Financial bodies have to promote and grant the low-interest loan accessing to the guarantee fund, to activate the market fairly and competitively.) The FI should also contain a lending crowdfunding element as a possible financing form to finance the intervention and access to the guarantee fund.

If we consider the participation of stakeholders in the design phase of the FI, we have rather limited information. A survey is mentioned to assess the demand and supply side of FIs. Probably the partner collected data from several stakeholders, but the obtained scores could be improved with some additional details on the design phase of FI.

### 4.3.8 Transferability

As the FIRECE partners are regional actors of member states in the EU, it is important that they should design solutions which can be applied on the national level. Good practices can inspire other member states to adopt elements of prospering programs if market circumstances and the business environment are close to those of the original partner.

The first question when considering transferability is the assessment of the applied methodology. An appropriate and well-implemented research is the cornerstone of the generalisability of results. The Italian partner provided in his report a well-focused assessment in good quality. Primary qualitative methods are not mentioned in the report; however, results of interviews or workshops can, in many cases, improve the design process of FIs.

As a quantitative method, the report mentions a survey. Some more details on the sample size or on the questions asked would improve the transferability of the provided FI. We only can find on page 4 that “after analysing the general characteristics and needs at the sector level through a survey of supply and demand for financial instruments at the level of a specific industry sector”.

The foreign best practices are summarized more precisely. A short summary of the experiences of Slovak Energy Efficiency and Renewable Energy Finance Facility is part of the assessment.

Because the partner does not report severe differences of firms financial or any other circumstances in Emilia-Romagna region compared to other regions in Italy, we assume that the FI can provide relevant and useful know-how and good practice for entire Italy.

The training element and the technical assistance in the construction are valuable propositions even at the international level. These innovative elements can be useful tools for FIs in other European countries.

## 5. Evaluation of the Ex-Ante Assessment Lubelskie Voivodeship, Poland

The Polish partner in FIRECE is the Lubelskie Voivodeship. The evaluation of the designed innovative FI is based on the reports A.T2.1 and A.T2.4 „Support for regional authorities to develop an ex-ante evaluation analysis”.

### 5.1 Summary of the Proposed Financial Instrument

The partner, the Lubelskie Voivodeship designed a combined FI consisting of loan plus grant component in case of small and medium sized companies and a product composed of loan, grant plus guarantee component in case of micro firms.

The three proposed instruments are the followings:

#### **Instrument I:**



- ◆ Loan + Subsidy for small and medium companies in a volume of PLN 500,000 - 1.5 million
- ◆ The loan component creates 50% - 75% of the project value
- ◆ Maximum funding period: over 60 months

### **Instrument II**

- ◆ Loan + Subsidy for micro companies in a volume of PLN 250,000
- ◆ The loan component creates 33% - 67% of the project value
- ◆ Maximum funding period: over 60 months

### **Instrument III**

- ◆ Loan + Subsidy + Guarantee for micro companies in a volume of PLN 250,000
- ◆ The loan component creates 33% - 67% of the project value
- ◆ The guarantee covers from 50% to 100% of the loan
- ◆ Maximum funding period: over 60 months

All planned financial instruments aim to close the funding gap in the areas of Measure 4.2. of ROP Priority Axis 4 Environmentally friendly energy (“Renewable energy production in enterprises”) and of Measure 5.1 of ROP Priority Axis 5 Energy efficiency and low-emission economy (“Improving the energy efficiency of enterprises”).

The presented innovative financial instrument resulted from two premises. Firstly, the use of a repayable instrument enables a higher number of supported projects by the returning capital to the managing authority; thus, it contributes to higher multiplier effects. Projects of these Measures proved to be profitable, and the use of loan element is confirmed; however, there is a significant risk from the demand side. Entrepreneurs declare interest in subsidy support to some extent, but they may not have sufficient interest in a loan program. Therefore, the partner decided on a mixed construction.

All instruments will be granted based on competition proceedings, conducted in accordance with the law, assumptions contained in the presented investment strategy, and other conditions defined by the Managing Authority. The allocation of funds between all instruments under a given measure remains the responsibility of the Managing Authority. A larger proportion of the funds is allocated to small and medium firms because the volume of their projects is larger, and due to the difficulty of the projects also costs are higher. According to the report, 65% of funds should be allocated to that part of the target group and the remaining 35% to the micro firms.

## 5.2 Quantitative Evaluation

Table 4: Quantitative evaluation of Lubelskie Voivodeship’s FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
1.	Scope of the assessed financial instrument	10	9



1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1
1.3	What kind of projects can be financed by the designed FI?	2	2
(1.4)	Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2
(1.5)	Novelty of FI regarding target group or supported activity	2	2
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>10</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	2
2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1
(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1
(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	4
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>7</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average	2	0

	amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)		
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	2
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fund or managing authority) (1-1 for each mentioned program, max.3)	3	3
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	2
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>15</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	5
4.2	Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	5
4.3	Does the report explicitly identify failures of previous financing opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)	2	2
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information)	2	2

	separately, or quantitative estimation of market gap/ financing need)		
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>8</b>
5.1	The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)	2	0
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes)  Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)	2	2
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)	1	1
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	3
(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2
<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>13</b>
6.1	Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)	2	0
6.2	Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)	2	2
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	5

(6.4)	<p>Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):</p> <p>Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?</p> <p>Does the project create new sources of revenue for beneficiaries/increase revenue?</p>	4	4
(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 - no; 2 - yes)	2	2
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>14</b>
7.1	Does the report identify the most important stakeholders of the project? (0 - no, 1 - yes, 2 - stakeholders and their relation to the project is also defined)	2	2
7.2	Is the sphere of actions of MA and other authorities defined? (0 - no, 1 - partially, 2 - principles of cooperation as well, 3 - entirely)	3	3
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	4
(7.4)	Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)	5	5
<b>8. Transferability</b>		<b>15</b>	<b>14</b>
8.1	Are the results of the study based on qualitative research? (0-6: 0 - only desktop research with less than 5 external citations, 1 - desktop research with 5-15 external references, 2 -	6	6

	desktop research with more than 15 external references, +1 - interviews with experts, +1 - workshops, +1- any other kind of qualitative research)		
8.2	Are the findings of the study based on quantitative research? (0 - no quantitative methodology, 1 - survey with a sample size less than 50 or without any information on sample size , 2 - survey with a sample size larger than 50, 3 - survey with a representative sample)	3	3
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 - detailed)	2	1
(8.4)	Will the construction provide a knowledge base transferable to other regions? (0 - no; 1 - partially, 2 - entirely)	2	2
(8.5)	Will the construction provide a knowledge base transferable to other member states? (0 - no; 1 - partially, 2 - entirely)	2	2
<b>TOTAL SCORE</b>		<b>100</b>	<b>90</b>

Source: own table

### 5.3 Summary of the evaluation areas and justification

One of the highest scores of the proposed FI is due to the differentiated construction according to the special needs of micro firms and small or medium businesses. A detailed and clear investment strategy and the well-defined governance structure highlighted all the important elements of an FI.

The other relevant element, obtaining a high score of Polish FI, is the combination of grant and loan. At the present level of economic and financial market's development, combined products the best overcome the difficulties of applicants with uncertainty in the profitability of their projects.

The detailed assessment applied an exigent methodology, both qualitative and quantitative one, which also contributed to high scores of the FI.

### 5.3.1 Scope of the Assessed Financial Instrument

The designed FI focuses on “Renewable energy production in enterprises” (Measure 4.2. of ROP Priority Axis 4 Environmentally friendly energy) and on “Improving the energy efficiency of enterprises” (Measure 5.1 of ROP Priority Axis 5 Energy efficiency and low-emission economy). An essential strength of the proposition is that the focus of the FI is consistent with all the applicable strategic documents (European level, national level, regional level).

The FI targets SMEs of Lubelskie Voivodeship and forecasts a relatively small number of beneficiaries, 330 companies. The size and the constructions are differentiated according to project size of the beneficiaries. Not only the smaller project size but also an additional guarantee element is considering special needs of micro firms. The FI does not require special experiences in energy projects, but an energy audit element of the construction assures the quality of the applicants' projects.

### 5.3.2 Value Added of the Financial Instrument

The qualitative analysis of value added not really holds on value driver factors but detects risk factors, which can affect the created value of FI. The most important risk is the uncertainty about the real profitability of renewable energy projects. The profitability of these projects is affected by classical market risk where risk factors are stock prices, interest rates, exchange rates and commodity prices. In this case, the cost of energy production (see fuel cost), the cost of selling electricity or heat to the grid are exposed to market risk. Another risk is related to the uncertainty of the applicable legal regulations and planned changes in them.

The leverage of the project is interpreted in several ways in the report. Leverage at the level of the final recipient is estimated to be equal to 2.2. Other leverage effects are related to additional resources; thus, they will be expounded in the next criterion. The revolving loan element of all the three proposed constructions have a multiplicative effect, it increases (the value added) the number of projects and the total amount of investment till and after the end of the program.

The proposed FI is consistent with other forms of interventions. Consistency is assessed on the resulting plane - whether other interventions have a similar or even the same goal and on an operational level - involving the possible simultaneous access of beneficiaries to various forms of intervention. For example, Measure 4.2. shows a total or partial internal complementarity with ROP programs supporting „Improving the energy efficiency of enterprises”, „Energy efficiency of the public sector”, „Energy efficiency of the housing sector” and „Energy efficiency of the public sector for ITIs of sub-regional cities”, „Low-emission transport”, „Promotion of low-emission”, „Energy efficiency and low-emission economy for Integrated Territorial Investments of the Lublin Functional Area”, „Low-emission transport for ITIs of subregional cities” and „Promotion of low-emission for ITIs by subregional cities”, „Waste management” and „Water and wastewater management”. Measure 5.1. has a partial internal complementarity with several ROP programs as well. External complementarity is also assessed for both goals of the FI.

Not only complementarity but also competition can occur on the market between the designed FI and other tools launched from the national level or capital tools offered by private investors. According to the findings of the report, this competition will not significantly affect the performance of the proposed FI.

The FI sets lower barriers to entry for applicants than other existing financial products available on the market. The guarantee part of the instrument designed to micro firms' reflections that these firms often have difficulties in obtaining credit due to the lack of creditworthiness. The loan element will have a preferential interest rate to maximize the debt service of beneficiaries.

### 5.3.3 Assessment of the Additional Resources

The leverage of the designed FI can be increased by involving additional resources. Table 5, cited from the partner's report (see Table 3, page 51), calculates leverage at the intermediary level and at the final recipient's level as well.

Table 5: Leverage of Lubelskie Voivodeship's FI

No.	Category	Indicator
1.	Leverage at the intermediary level (private equity of financial intermediaries or investors)	1,1
2.	Leverage at the level of the final recipient	2,2
3.	Leverage at the intermediary level (private equity of financial intermediaries or investors)	Assuming a private equity share of 10%, 111% of allocated investment funds will be allocated to subscribing for shares in newly created companies
4.	Leverage at the level of the final recipient	Assuming that the fund covers an average of 50% of shares, we have a leverage ratio of 2.2, calculated according to the formula: (item 12x[1/(1-poz.5105)/100%])
5.	Minimum share of a private investor	At least 5% of the capital input funds are required to be provided by the beneficiary of the capital program. Calculated according to the formula:(item 1x [1 / (1- assumed indicator 106) / 100%])

Source: Partner's report Table 3 page 51

Additional public resources (if double financing is not excluded) have been already studied in the assessment of value added. Where complementarity with other program arises, there may also be a possibility of withdrawing additional public resources.

Private sources are only mentioned like crowdfunding, which is a successful tool in financing energy projects in Europe. Suppose we consider recent use of additional resources and the capacity of firms to absorb external resources in the report. In that case, we can read that in the last five years, over 2/3 of enterprises applied for external financing in the Lubelskie Voivodeship. The 42% of applicants applied for credit, 36% of them for leasing and 28% of them for subsidy. The loan has been less popular, only 12% of companies applied for it. A minority of companies uses capital contribution, only 3.4%. 31% of all the enterprises decided to apply for one form of external finance, 17% of them

applied for two different sources, and 13% of firms were looking for three financial solutions. We can state that the level of diversification is significant and a significant part of firms was able to attain external financial resources. However, the firm's size is an important factor in this question: 80% of medium firms, 77% of small firms, but only 56% of micros reported interest in these funds.

### 5.3.4 Incorporation of Previous Experiences

The report contains a detailed market gap analysis identifying different sources of market failures. An extensive overview of the financial structure of SMEs is also included in the assessment.

There have been several financial products available in the private and the public sector as well in the programming period 2007-2013. Lending financial products, like project loans, intermediated loans, venture capital, venture debt, microfinance and equity and fund investment, are enumerated in the report. Structured finance, guarantees, Private Finance for Energy Efficiency (PF4EE), project bonds, trust bonds, the constructions of JEREMIE and JESSICA and the instruments of ESIF represent blending financial products. Dedicated credit lines and risk-sharing facilities also helped polish SMEs to find financial resources.

Sources dedicated to energy efficiency are more exhaustively assessed. The report contains an overview of existing public funding opportunities. First, the sources of financing for energy improvement measures are listed:

- ◆ Regional Operational Programs (ROP): 60% of the structural funds are allocated to 16 regional programs in the years 2014–2020.
- ◆ Energia Plus Priority Program (horizontal): the goal of the program is to reduce the negative impact of enterprises on the environment in the years 2019-2025.
- ◆ EWE Energy Efficiency in Enterprises: support program for projects in the field of low-carbon and resource-efficient economy in years 2017–2023.
- ◆ As part of the Operational Program Infrastructure and Environment, a national support system is running for the public and housing sectors as well as enterprises in the field of energy efficiency and renewable energy in years 2014–2020.

Considering the scope of the designed FI Measure 4.2. (Renewable energy production in enterprises) and Measure 5.1. (Improving the energy efficiency of enterprises), the report identified programs where complementarities may occur in case of Measure 5.1:

- ◆ Infrastructure and Environment Operational Program: supported investments are increasing the energy efficiency of the economy, in particular those associated with reducing emissions from construction, heating and transport.
- ◆ Rural Development Program: supported activities are energy rationalization or the use of renewable energy sources in SMEs with a focus on the processing and marketing of agricultural products.
- ◆ Eastern Poland Operational Program: supported investments are reducing emissions generated by transport.
- ◆ INTERREG EUROPA program: supports the implementation of regional development policies in the field of transition to a low-carbon economy.



- ♦ CENTRAL EUROPE 2020 program: supports the implementation of the low carbon strategy in cities and regions.
- ♦ The BALTIC SEA REGION program: supporting management and financing models and technological solutions in the field of production and distribution of energy from renewable sources and better energy efficiency.
- ♦ The Fisheries and Sea Operational Program: supported investments are equipments or fishing vessels which reduce emissions of pollutants or greenhouse gases and increase the energy efficiency of fishing vessels.

The report contains a detailed market gap estimation based on three methods: studying the Central Statistical Office statistics, the AFN (Additional Fund Needed) model for capital demand and a survey conducted among enterprises of the Lubelskie Voivodeship. As a result, the volume of 300 million PLN is estimated for the value of annual financial gap for enterprises in the region.

The market failures for the Lubelskie Voivodeship have been explored by a survey conducted among regional SMEs. Based on the collected data through a „Market failures questionnaire (A.T2.1)” in 2019, the following market errors were identified:

- ♦ structural macro-economic failures: negative externalities, lack of adequate regulatory,
- ♦ demand-side market failures: asymmetric and imperfect information, the small size of projects and high transaction costs, scarcity of investment-ready projects, problems of creditworthiness of the company,
- ♦ supply-side market failures: lack of access to appropriate finance, suboptimal investment situations, the divergence of the demand for investments in energy efficiency and the goals of the Regional Energy Plan.

The proposed constructions all provide an adequate answer to many of the failures; thus, the FI can decrease the explored market gap.

### 5.3.5 Proposed Investment Strategy

The proposed FI has three versions where all the three constructions cover Measure 4.2. Renewable energy production in enterprises and Measure 5.1. Improving the energy efficiency of enterprises as well.

#### **Instrument I**

It is a combined product, consisting of a loan and subsidy component for small and medium companies. The maximum unit of support ranges between PLN 1.5 million up to PLN 500,000. The loan component creates 50% - 75% of the project value. The subsidy component finances the remaining part (25%-50%) of the project. The MA determines the proportion of the returnable and non-returnable component. MA sets the interest rate for the refundable part of the subvention. The loan repayment happens in fixed instalments after a grace period equal to the duration of the investment. The fixed amount of redemption is defined by the amount granted, the duration of the financing and the interest rate. The maximum funding period is over 60 months.

#### **Instrument II**

It is a combined product, consisting of a loan and subsidy component for micro companies. The maximum unit of support is PLN 250,000. The loan component creates the 33% - 67% of the project value. The subsidy component finances the remaining part (33%-67%) of the project. The MA determines the proportion of the returnable and non-returnable component. MA sets the interest rate for the refundable part of the subvention. The loan repayment happens in fixed instalments after a grace period equal to the duration of the investment. The fixed amount of redemption is defined by the amount granted, the duration of the financing and the interest rate. The maximum funding period is over 60 months.

### **Instrument III**

The third instrument is a combined product as well, consisting of a loan and subsidy plus guarantee component for micro companies. The maximum unit of support is PLN 250,000. The loan component creates the 33% - 67% of the project value. The subsidy component finances the remaining part (33%-67%) of the project. The MA determines the proportion of the returnable and non-returnable component. MA sets the interest rate for the refundable part of the subvention. The loan repayment happens in fixed instalments after a grace period equal to the duration of the investment. The fixed amount of redemption is defined by the amount granted, the duration of the financing and the interest rate. The maximum funding period is over 60 months. The guarantee covers from 50% to 100% of the value of the debt part of the instrument.

As the three constructions show, the longer payback period of energy efficiency projects is considered; however, the partner reports that the redemption starts immediately after the investment because the supported activities bring benefits from the moment they are put into use.

The total volume of financing can be estimated by the expected number of beneficiaries. Support will be provided to 330 entities.

The construction is compatible with the applicable state aid rules. Part 4.3 of the report assesses the required aspects.

The energy audit, which is part of the construction is an innovative element of the proposed solution. It also decreases informational uncertainties of energy projects; thus, it contributes to the decrease of credit rationing. The harmonization of the repayment plan and the life cycle of investment helps companies to overcome market failures, not reflecting the specialities of energy efficiency projects.

### **5.3.6 Expected results of the Financial Instrument**

The output indicators to measure the expected results of FI covering Renewable energy production in enterprises (Measure 4.2) are defined in the "Detailed Description of Priority Axes of the Regional Operational Program of the Lubelskie Voivodeship 2014-2020". The partner found that the following indicators can be applied to FIRECE projects:

- ◆ Productive investments: number of enterprises receiving support

- ◆ Renewable energy: the additional capacity to generate energy from renewable sources
- ◆ Reduction of greenhouse gas emissions: estimated annual decrease in greenhouse gas emissions
- ◆ Number of renewable energy generation units built

Similarly, the output indicators of Improving the energy efficiency of enterprises (Measure 5.1) are presented in the same "Detailed Description of Priority Axes of the Regional Operational Program of the Lubelskie Voivodeship 2014-2020". For this measure, the following indicators can be applied to FIRECE projects:

- ◆ Number of enterprises receiving support
- ◆ Additional capacity to generate energy from renewable sources
- ◆ Estimated annual decrease in greenhouse gas emissions
- ◆ Amount of electricity saved.

According to the forecasts cited by the report, the majority of indicators will shortly exceed the target values for 2023.

After defining the output indicators, the report also defines how the FI will contribute to the strategic objectives of the partner. More precisely, strategic goals can be considered at three levels: at the European Union level, at the national level and at the regional level. Relevant strategic documents are 'Europe 2020: The European Union Strategy for Growth and Employment', "National Development Strategy 2020" and "Long-Term National Development Strategy. Poland 2030. Third Wave of Modernity", finally for regional level "Development Strategy for the Lubelskie Voivodeship for 2014-2020 (with a perspective up to 2030)".

FI covering Renewable energy production in enterprises (Measure 4.2) corresponds to the implementation of Objective 3 of the Europe 2020 strategy, which is targeting an increase in the share of renewable energy and energy efficiency. Objective 6 of Area II of the "National Development Strategy 2020" aims increased diversification of fuel and energy supplies; thus, there is a match to the designed FI. At the regional level, the proposed FI can contribute to Objective 3.5 which assumes support for small and medium-sized enterprises and to Objective 2.5 which concerns equipping rural areas with transport and communal infrastructure and energy.

FI covering „Improving the energy efficiency of enterprises“ (Measure 5.1) fits with Objective 3 of the Europe 2020 strategy, with the Objective 2 of Area II of the 'National Development Strategy 2020'. At the regional level, Objective 3.5 and Objective 2.5 are matching with the goals of FIRECE.

### 5.3.7 Involvement of Stakeholders

The report identifies the most important stakeholders, and their relation to the project is also defined. There are detailed propositions provided on the sphere of actions of MA and other authorities. The short summary of the roles of different stakeholders in the project is as follows.

The target group and the beneficiaries of the project are Polish SMEs.

The MA has to allocate the fund between Instruments I-II-III.; which means that the allocation is defined between the small plus medium sized firms and the micro businesses. The proportion of the returnable and non-returnable component of the designed FI is determined by the MA. MA sets the interest rate for the refundable part of the subvention.

An intermediary institution will be involved in the project responsible for implementing the financial instrument and delivering it to final recipients. MA will have the task to choose financial intermediary. The authority should be provided with flexibility in this field. The responsibility of the intermediary institution is defined by the regulations conditioning the rules of operation and operation of the instrument, as well as the remuneration of the intermediate body. The contract concluded with the intermediary institution includes solutions for monitoring and reporting and decisions regarding the re-use of funds allocated to support.

The partner insured a high level of involvement for stakeholders in the preliminary stage of the project. The FI was then adjusted according to the results of a survey conducted on a representative sample of small and medium enterprises from the Lubelskie Voivodeship. Conclusions of interviews with representatives of following organizations are considered as well: Managing authorities: (MA RPO WL, BEP, LESA, and Department of the Environment and Natural Resources of the UM WL), financial intermediaries (in the perspective of RPO WL 2014-2020 and potential ones), scientific experts: Lublin University of Technology, UMCS, and ULS. The MA ROP WL 2014-2020 Lubelskie Voivodeship, representatives of the Department of Environment and Natural Resources of the UM WL, representatives of the Department of Strategy and Development of the UM WL, representatives of the Lublin Enterprise Support Agency, representatives of the Regional Fund for Environmental Protection and Water Management in Lublin also had the opportunity to influence the design of the FI.

### 5.3.8 Transferability

The first question when considering transferability is the assessment of the applied methodology. The report is one of the best documented in the FIRECE project. Desktop research processed strategic documentation regarding FIs, Program, competition and design documentation plus reporting documentation on the implementation of financial instruments. Findings of CSO studies on the energy efficiency of SMEs and renewable energy are also incorporated in the report. The applied qualitative methodology enriches the results of secondary research. Interviews with the representatives of Managing authorities, of Department of the Environment and Natural Resources, of financial intermediaries and scientific experts from Lublin University of Technology also mentioned. Furthermore, an expert panel took place with similar participants, as well.

The quantitative research provides the mathematical and statistical background of generalisation. In the case of Lubelskie Voivodeship, the partner conducted a research with a representative sample of small and medium enterprises from the region.

The extended overview of existing products and on market situation contained some information on good foreign practices as well. Crowdfunding is mentioned as a successful instrument for financing energy efficiency around Europe.

If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. The differentiation according to the firm size (micro vs small and medium) reflects the special needs of the micro companies like the insufficient creditworthiness, which is to be ameliorated by the guarantee element of the FI. The redemption plan matches the timing of profit generating ability of financed projects. The compulsory energy audit during the projects generates an important set of information from possible energy saving opportunities to the financial potential of the proposed project. All the three enumerated elements of the FI can contribute to the success of the FI and to make it a good practice worth to transfer to other countries.

## 6. Evaluation of the Ex-Ante Assessment Istrian Regional Energy Agency Ltd., Croatia

The Croatian partner in FIRECE is IRENA, the Istarska Regionalna Energetska Agencija Ltd. The evaluation of the designed innovative FI is based on the reports "EX-ANTE ASSESSMENT FOR THE IMPLEMENTATION OF FINANCIAL INSTRUMENTS IN THE INVESTMENT AREAS OF ENERGY EFFICIENCY AND USE OF RENEWABLE ENERGY SOURCES FOR THE ISTRIAN COUNTY", D.T.2.1.2 – „Preparation of PA1: CE Ex-Ante Assessment Analysis report" and D.T.2.4.3 – „Ex-Ante Assessment finalisation and feasibility study for the IFI implementation in Croatia".

### 6.1 Summary of the Proposed Financial Instrument

The Istrian partner proposed a combined FI consisting of a grant and a loan element. The FI targets Istrian SMEs and has the goal to finance projects related to energy efficiency and the use of RES. The total volume for FIRECE project is approximately HRK 148 million, the eligible cost of one single beneficiary would be between HRK 75.000 and HRK 3.750.000.

In the proposed hybrid form of the FI the grant element will have a share of at least 10.00% and at most 30.00%, depending on the size of the firm and the type of project. The loan amount will range between HRK 52.500 - HRK 3.375.000. After a grace period, up to 24 months repayments take place on a monthly, quarterly or semi-annual rates. The loan will be repaid within 12 years. Interest rate equals to 0,05% - 0,75% depending on the size of the beneficiary.

The report cited several times that the financial figures of Istrian firms do not allow them to apply for external financing, for financial instruments. The grant element of the FI encourages targets to absorb the loan element with the financial instrument. Thus, the FI increases the number and amount of investments and contributes to EU objectives and to national energy strategy and action plan.

## 6.2 Quantitative Evaluation

Table 6: Quantitative evaluation of Istrian Regional Energy Agency's FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
<b>1. Scope of the assessed financial instrument</b>		<b>10</b>	
1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1
1.3	What kind of projects can be financed by the designed FI?	2	2
(1.4)	Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2
(1.5)	Novelty of FI regarding target group or supported activity	2	2
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>9</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	2
2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1
(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1

(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	3
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>8</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)	2	2
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	1
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fund or managing authority) (1-1 for each mentioned program, max.3)	3	3
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	2
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>15</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	5
4.2	Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	5
4.3	Does the report explicitly identify failures of previous financing	2	2

	opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)		
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>8</b>
5.1	The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)	2	2
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes)  Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)	2	2
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)	1	1
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	1
(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2
<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>11</b>
6.1	Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)	2	1



6.2	Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)	2	2
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	5
(6.4)	Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):  Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?  Does the project create new sources of revenue for beneficiaries/increase revenue?	4	3
(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	0
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>15</b>
7.1	Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and their relation to the project is also defined)	2	2
7.2	Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially, 2 – principles of cooperation as well, 3 – entirely)	3	3
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	5
(7.4)	Involvement of stakeholders in the proposed financial program (managing	5	5

	tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)		
<b>8. Transferability</b>		<b>15</b>	<b>14</b>
8.1	Are the results of the study based on qualitative research? (0-6: 0 – only desktop research with less than 5 external citations, 1 – desktop research with 5-15 external references, 2 – desktop research with more than 15 external references, +1 – interviews with experts, +1 – workshops, +1- any other kind of qualitative research)	6	6
8.2	Are the findings of the study based on quantitative research? (0 – no quantitative methodology, 1 – survey with a sample size less than 50 or without any information on sample size , 2 – survey with a sample size larger than 50, 3 – survey with a representative sample)	3	3
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 – detailed)	2	1
(8.4)	Will the construction provide a knowledge base transferable to other regions? (0 – no; 1 – partially, 2 – entirely)	2	2
(8.5)	Will the construction provide a knowledge base transferable to other member states? (0 – no; 1 – partially, 2 – entirely)	2	2
<b>TOTAL SCORE</b>		<b>100</b>	<b>89</b>

Source: own table

### 6.3 Summary of the evaluation areas and justification

The Istrian partner provided a detailed ex-ante assessment of the proposed FI. The report covers several topics which are not scored by this present evaluation but are of great importance to understand why the designed FI fits the needs of Istrian SMEs. (See the

assessment of energy consumption in Croatia, the analysis of financial figures of SME sector.) The report obtained nearly the maximum score for evaluation criteria incorporation of previous experiences, involvement of stakeholders, transferability. The assessment of the score of FI and the analysis of value added were also successfully explained. But there were certain deficiencies regarding the possibility of attracting additional resources, and also the lack of a compulsory energy audit decreased the total scoring of the FI.

### 6.3.1 Scope of the Assessed Financial Instrument

The overall goal of the FIRECE project is to establish innovative financial solutions to facilitate the transition to low carbon emission among small and medium-sized enterprises. The Istrian partner designed a FI to SMEs combined from a loan and a grant component. The goal of the construction is to significantly incite Istrian SMEs to apply for external financing, to increase the number of investments. Considering the aims of FIRECE, the proposed FI contributes to the achievement of general energy, climate and environmental goals. It will develop the competitiveness of the local economy through the effect of leverage and the reduced business costs for SMEs.

The size of the project is quite flexible, the eligible cost of the energy efficiency (EE) improvement projects and for the use of RES would be between HRK 75.000 and HRK 3.750.000. Thus, all size of firms can use the FI as such an external financing tool that is appropriate to the volume of the firm's project. The FI targets all the SMEs in Istria, and there is no distinction between applicants with and without experiences in EE and RES projects. It is the task of intermediate bodies to evaluate projects of applicants and to decide which ones have a quality high enough to be funded.

The FI will finance projects for EE and use of RES. The report shows off the consistency of the FI with the strategic objectives at European, national and regional level.

Several private products have been available for the target group, but they have been withdrawn due to lack of interest from to demand side. Special energy related products are not offered at the moment at the Istrian financial markets for SMEs.

Public interventions can take two forms. Grants are always more popular than repayable forms of financing. But hidden implicit costs like high administrative tasks or difficult and long application process can reduce the interest in grants if loans are more accessible for the same purpose. Several public programs exist even for energy projects, but they do not cover a high proportion of Istrian SMEs. In later evaluation criteria, the reasons for this market failure will be explained in detail.

The novelty of the FI is the hybrid or the combined construction. Namely, the proposed FI is composed of a grant and a loan element. The grant element partially unwinds the effect of the loan element, which increases the leverage ratios of supported firms. Overdebtness and low liquidity are already a severe problem among Istrian firms, and this can be the reason why they do not tend to use FIs or loan products of commercial banks.

### 6.3.2 Value Added of the Financial Instrument

Usually, the leverage effect of an FI is appreciated as an added value of the FI. But in the Istrian case, we should consider that Istrian entrepreneurs are over-indebted and illiquid. When designing the leverage effect, the partner had to remember that in the observed period the debt ratio averaged 0,63, the own financing ratio was 0,37, the financing ratio was 1,71, and the value of the debt factor was 6,29. Since the level of corporate debt should never approach 100%, the low absorption capacity of financial instruments among Istrian firms has to be considered. At that point has the grant element an important role, namely, the grant is partially neutralizing the increase of the leverage of beneficiaries due to the loan component.

The leverage effect of the proposed FI is detailed assessed and calculated by the partner. Based on the appropriate methodology (methodology of the Member States Guide, Article 46 and Article 37), the net leverage effect of the innovative financial instrument is 74,15%. Possible private resources can further increase leverage. Financing from commercial bank resources (or an increase in HBOR's share) can contribute to a higher level of leverage.

An important value driver after the leverage effect is the multiplicative characteristic of the loan element. There are not detailed calculations in the report on the revolving of loans, but the loan element assures a higher impact on the Istrian economy than the initial total volume of the loans.

The FI is fully coherent with other forms of public interventions which have the goal to improve energy efficiency and use of renewable energy in the current programming period. Because energy and environmental objectives of the EU (2030 and 2050) require measures to promote the decarbonisation of the European economy and society, the designed FI and the entire FIRECE project will be in accordance with other forms of public intervention in the next programming period.

The assessment of the qualitative added value shows several results. The grant element of the FI encourages targets to absorb the loan element with the financial instrument. Direct results are the increase in the number and amount of investments, the reducing of energy related costs of beneficiaries and enhancing their competitiveness. Indirectly the FIRECE product can contribute to the EU objectives and to national energy strategy and action plan. Increasing the competitiveness of the European economy or achieving energy, climate and environmental objectives are indirectly all enhanced by the proposed FI.

The report cited several times that the financial figures of Istrian firms do not allow them to apply for external financing, for financial instruments. Their high debt ratio, low liquidity and uncertain rate of return on energy projects discourage commercial banks from financing Istrian SMEs. Thus, the grant element of the FI enables investment projects which would not take place otherwise. In this aspect, the grant element sets lower barriers to entry for applicants than other existing financial products available on the market.

### 6.3.3 Assessment of the Additional Resources

As potential public resources, the report expounds ESI Funds and EFSI. First, the partner provides a short description on the five ESI Funds: Cohesion Fund, European Regional Development Fund (ERDF), European Social Fund (ESF), European Agricultural Fund for Rural Development (EAFRD) and European Maritime and Fisheries Fund (EFPR). As Table 7 cited from Table of the Istrian report summarizes, the different goals supported by ESIF can be funded from several sources or funds.

Table 7: ESIF Funds and scope of the financing in Croatia

Thematic goal		Source of financing	CF	ESF	ERDF	EAFRD	EMFF
1.	Strengthening research, technological development and innovation				X	X	
2.	Strengthening access toward use of information and communication technologies				X	X	
3.	Strengthening the competitiveness of small and medium-sized enterprises, the agricultural sector				X	X	X
4.	Support for moving towards an economy based on low CO2 emissions across all Sectors		X		X	X	X
5.	Promoting climate change adaptation, prevention and risk management		X		X	X	
6.	Protecting the environment and promoting resource efficiency		X		X	X	X
7.	Promoting sustainable transport and removing bottlenecks on key transport network infrastructure		X		X	X	
8.	Promoting employment and supporting labor mobility			X	X	X	X
9.	Promoting social inclusion and combating poverty			X	X	X	
10.	Investing in education, skills and lifelong learning			X	X	X	
11.	Institutional capacity building and effective public administration		X	X	X		
Technical support			X	X	X	X	X

Source: Istrian report, page 44. Table 7

Projects on EE and use of RES are related to several thematic goals. Operational Program Competitiveness and Cohesion 2014-2020 is funded by the European Regional Development Fund and the Cohesion Fund. The thematic areas within the program are Environmental protection (water and municipal infrastructure and waste management), transport infrastructure and adaptation to climate change; Competitiveness, research and innovation, information and telecommunications technologies, SME development, low carbon economy and education; SME support and investment in research, development and innovation. The program is the largest one in Croatia, in the period 2014-2020, 6,88 billion EUR is available to member state.

In addition to ESI Funds, also the EFSI funds can be used to enhance long-term economic growth and competitiveness in the EU. A short overview of possibilities in the framework of EFSI is also part of assessing additional public resources.

Attracting additional private resources is more limited, according to the presented results. Based on interviews with representatives of commercial banks, several products existed on the market for SMEs, but they were withdrawn from the supply. A second possibility, according to the assessment, can be crowdfunding. This form of financing is detailed evaluated in the report. However, the conclusion is that crowdfunding has not been recognized as an alternative model of project financing and potential campaigns to fund EE and RES projects could not be successful.

### 6.3.4 Incorporation of Previous Experiences

The report contains an overview of existing funding opportunities. Several financial instruments in the programming period 2014-2020 are implemented. The following three institutions implement the listed FIs:

- ◆ Croatian Bank for Reconstruction and Development (HBOR):
  - ESIF Loans for growth and development under Priority Axis 3 “Business Competitiveness” of OPKK (OP “Competitiveness and Cohesion 2014-2020”),
  - ESIF loans for energy efficiency in public buildings under Priority Axis 4 “Promoting Energy Efficiency and Renewable Energy” by OPKK,
  - ESIF loans for public lighting under Priority Axis 4 “Promoting Energy Efficiency and Renewable Energy” by OPKK,
  - ESIF loans for energy efficiency for entrepreneurs under Priority Axis 4 “Promotion of Energy Efficiency and Renewable Energy” by OPKK. This program shows similarities with the FIRECE project. The goal of this program is a reduction of a volume of 20% in the supplied energy. Supported activities are increasing energy efficiency in manufacturing industries and in the service sector (tourism and trade) by using less input energy and reducing the share of conventional (fossil) fuels in total consumption energy by introducing renewable energy sources.
- ◆ Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO): implements financial instruments under Priority Axis 3 „Business Competitiveness” OPKK:
  - ESIF Limited portfolio guarantee,
  - ESIF Individual guarantee without interest rate subsidy,
  - ESIF Individual guarantee with interest rate subsidy,
  - ESIF Micro loans,
  - ESIF Small loans.
- ◆ European investment fund (EIF):
  - ESIF Risk capital fund

Just for the illustration that the interest of Istrian entrepreneurs in financial instruments is extremely low, we cite some figures from the report. From 2016 up to 2019 53 firms in Istria were credited with a total of HRK 13.756.247,07. The ESIF guarantee with interest rate subsidy was used by 15 Istrian entrepreneurs with a total value of HRK 66.890.313,60. Therefore, already the Introduction of the report starts with the idea that the designed innovative financial instrument has to be attractive enough to increase the demand for financial instruments as a preferable way of financing projects.

However, the report contains an overview of previous energy efficiency programs; usually these are public programs and firms are not targeted by these measures. The following three programs were available in energy efficiency:

- ◆ „ESIF loans for energy efficiency“
- ◆ „Environmental protection program“
- ◆ „ESIF loans for public lightening“

Only the „Environmental protection program“ supports firms, but in the Istrian region, this FI was not popular.

At the same time, call for ESIF grants were usually closed before the prescribed closing date of the call because of the high interest of applicants. Their applications significantly exceeded the amount of allocated funds. In the current programming period, nearly 55% of signed contracts were related to energy efficiency or RES. But 867 from the 1370 energy related projects were implemented by public actors. Households had significant participation in grant programs as well. Thus, the part of SMEs in ESIF grants was moderate.

The ESCO model was also available for companies, but in Istria and Croatia as well the model is not a frequently used solution for energy efficiency and RES projects.

The report explicitly identifies failures of previous financing opportunities. Demand-side failures have several reasons:

- ◆ There was a non-refundable grants offer in the market; thus, a kind of out-crowding effect could be observed.
- ◆ Istrian entrepreneurs have low credit potential and are risky applicants for FIs. Namely, more than one third of firms were generating a loss in 2018; only 1000 firms have invested over the last three years. But for prospering firms who were typically investing, there is a favourable commercial bank loans offer on the market.
- ◆ However, the energy needs of Istrian firms are rising; they pay a high price for energy savings due to their incoherent energy efficiency plans. But in the case of well-prepared investment plans, low rates of return are characteristic for energy efficiency and renewable energy resources projects.
- ◆ Potential applicants are lack of information on the possibilities and advantages of using FIs in energy efficiency. Insufficient information about the opportunities and benefits of implementing the EE Enhancement Project and using RES is only one reason for low demand of FIs; there is also a mistrust of entrepreneurs towards financial and public sector institutions.
- ◆ The insufficient communication of public bodies has to be ameliorated in the future.

From the supply side, the partner reports that local authorities and other public bodies are not interested in promoting the financial instruments.

Suboptimal investments are explained as in all other reports by high costs and efforts of preparation the project proposals and by the long payback period of projects. But here is also reported that the high level of centralization of the Public Calls management system contributes to unrealistic placed goals at the county and local level.



### 6.3.5 Proposed Investment Strategy

The report proposes an innovative FI which has the potential to approach SMEs that would not start investments without the FI.

The FI will be a combined or hybrid construction, and it consists of a loan and a grant element. Considering the leverage ratios which have been already high among potential targets, it is important that the grant element will help to moderate the leverage effect of the loan element. The details of the construction of the designed FI are as follows: According to the calculation (See partner's report, Table 8), the total volume for FIRECE goals in the next programming period is assumed to be approximately HRK 148 million for Istrian entrepreneurs for the implementation of EE and RES projects. The eligible cost of the EE improvement projects and that of use of RES would be between HRK 75.000 and HRK 3.750.000.

The grant element can be funded using three sources:

- ◆ grants from ERDF,
- ◆ national contribution from central government funds,
- ◆ national contribution from local and regional authorities' funds.

In the proposed hybrid form of the FI, the grant element will have a share of at least 10.00% and at most 30.00%, depending on the size of the firm and the type of project. Community grants will finance 70% of the total volume of the grant. The national co-financing by the central government will have a share of 20% within the grant element, and the remaining 10% will be funded by local co-financing.

The source of the loan element flows from the InvestEU program after the termination of use of the EFSI. The 70.00% will be provided through Community Assistance Instruments (ESIF). The remaining 30% of the required funds for the FI will be provided by the Croatian Bank for Reconstruction and Development.

There are several propositions on the terms of the loan element in the report:

- ◆ Loan amount: HRK 52.500 - HRK 3.375.000
- ◆ Disbursement up to 24 months
- ◆ Grace period up to 24 months
- ◆ Redemption plan includes a grace period; repayments take place on monthly, quarterly or semi-annual rates. The loan will be repaid within 12 years.
- ◆ Interest rate: 0,05% - 0,75%, depending on the size of the beneficiary
- ◆ No usual extra credit costs (different fees)

The redemption plan reflects the longer payback period of energy efficiency projects; thus, beneficiaries will have enough time even at moderate profitability to repay the loan element. The loan element itself is not only important because of its revolving and multiplicative characteristic, but also due to its incentive effects. Compared to a sole grant construction, the loan incites potential beneficiaries to launch only viable projects which are able to generate cash flow that sufficient to cover the debt service.

The innovative element of the FI is the possibility of workshops for applicants. In the description of tasks of the first level intermediate body, we can find that the Ministry of

Economy, Entrepreneurship and Crafts organizes informative and/or educational workshops for potential applicants if necessary.

This innovative financial instrument is consistent with applicable state aid rules. The FI targets SMEs of Istria by a combined product in which the grant ratio is between 10,00% and 30,00%. 70% of the FI consists of a loan. Therefore, the proposed construction complies with the State Aid Program for the promotion of energy efficiency and renewable energy in enterprises and the de minimis aid program for the promotion of energy efficiency and renewable energy in enterprises.

### 6.3.6 Expected results of the Financial Instrument

As the partner derives the need of a hybrid construction (loan+grant) of the designed FI based on the detailed assessment of market failures and underinvestment, we can find that the most important result of the FI will be that energy efficiency and RES projects that would not have been started otherwise, can take place with the help of the FI. From this point of view, through the increased number of investments, the FI contributes to the reducing CO2 emissions, reducing energy losses or increasing the share of renewable energy resources as well and realization of energy action plans. The economic effects are the increased absorption capacity of the country, the reduced unemployment, the decreased operating costs of SMEs and their rising competitiveness.

The partner designed a set of variables to monitor and to evaluate supported projects. The following indicators are appropriate for both energy efficiency and RES projects:

- ◆ Number of approved projects/investments,
- ◆ Number of implemented project/investments,
- ◆ Number and surface area of facilities that have increased energy efficiency,
- ◆ Total amount of investments,
- ◆ Number of entrepreneurs and craftsman,
- ◆ Number of employees,
- ◆ Operating results of Istrian entrepreneurs (primarily by economic activities in which most projects were funded),
- ◆ Energy consumption in the observed period,
- ◆ Energy consumption by economic activities,
- ◆ The amount of CO2 and other emissions of harmful gases,
- ◆ Percentage of realization of energy action plans.

The indicators should be collected, reported to MAs and regularly evaluated because they provide the necessary relevant information for policy-makers whether there are possible adjustments of the proposed financing models needed.

### 6.3.7 Involvement of Stakeholders

The report identifies the most important stakeholders, and their relation to the project is also defined. There are detailed propositions provided on the sphere of actions of MA and other authorities. The short summary of the roles of different stakeholders in the project is as follows.

In the design phase of FI, several representatives of potential stakeholders participated. Surveys and interviews helped to explore the needs of SMEs as main users and to know also the aspects of the supply side local authorities in the Istrian County area and representatives of three commercial banks and Croatian Bank for Reconstruction and Development were interviewed.

The roles and responsibilities of stakeholders affected during the implementation of the FI are also defined in the report. The construction targets Istrian SMEs.

Ministry of Regional Development and European Union Funds will take the role of the Managing Authority. The related tasks are the management of the operational program, delegation of powers to first and second intermediate bodies. MA should also conclude the agreement on the implementation of the financial instrument with the implementing body (HBOR). There can be some other activities in accordance with laws, directives and regulations; these will be performed by the MA as well.

The first level intermediate body is the Ministry of Economy, Entrepreneurship and Crafts. It defines the capacity of the financial instrument, develops a manual on rules and procedures, eligibility criteria for project proposals. The prepared documentation has to be in accordance with relevant laws, regulations. After the preparation of call for project proposals, the first level intermediate body participates in the evaluation and selection of project proposals. An important role of the Ministry of Economy, Entrepreneurship and Crafts is to provide part of the national co-financing component. Monitoring project implementation progress also belongs to the intermediate body. Based on the results of monitoring, the ministry can decide to organize informative and/or educational workshops for potential applicants. All these tasks of the first intermediate body should be performed in cooperation with the second level intermediate body.

According to the actual Croatian law and regulations, the Environmental Protection and Energy Efficiency Fund (EPEEF) fulfils the role of the second level intermediate body for EE and RES, climate change adaptation, air protection, biodiversity, and NATURA 2000 areas. It shares the tasks with the first intermediate body in the preparation of call for proposal, in the evaluation and selection of project proposals. EPEEF provides part of the funds of the national component of co-financing and makes payments related to the grant part of the construction.

The Croatian Bank for Reconstruction and Development (HBOR) acts as implementing body and has to implement the financial instrument as a designated manager of ESIF funds. Most important tasks of HBOR are the followings: participation in the development of eligibility criteria, reception of approval for project proposal, contracting for financing project proposals. HBOR will provide the loan element of the construction. Monitoring, reporting to partner bodies are also performed by the implementing body.

Finally, since certain legislative adjustments are needed at the country level, the Republic of Croatia is also a stakeholder of the project.

### 6.3.8 Transferability

The first question when considering transferability is the assessment of the applied methodology. The partner conducted secondary research based on the documents and data provided by Istrian County, IRENA-Istrian Regional Energy Agency, Croatian Bureau of Statistics, Croatian National Bank, Ministry of Regional Development and EU Funds, Croatian Bank for Reconstruction and Development (HBOR) and tertiary sources (fi-compass, EIB).

The quantitative research provides the mathematical and statistical background of generalisation. Although the Croatian partner conducted a survey among key stakeholder groups (regional and local authorities, SMEs and banks), the low number of participants does not allow to use quantitative models for the evaluation of collected data. The survey of Istrian entrepreneurs collected only a sample of 23 entrepreneurs while during a period of 35 days, more than 180 entrepreneurs were contacted.

As a primary qualitative method, direct interviews took place with representatives of three commercial banks and Croatian Bank for Reconstruction and Development.

Foreign good practices are only partially part of the assessment. Crowdfunding is mentioned as a well-performing financial solution in several countries. However, according to the Croatian report, crowdfunding campaigns for EE improvement projects and the use of RES by Istrian entrepreneurs cannot attract significant funding.

If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. However, the Istrian firms show some differences to entrepreneurs of other Croatian regions, the combined form of FI consisting of loan plus grant component can be an appropriate tool to enhance EE and RES related investments among SMEs. The Istrian FI can be a good practice in all foreign member states where the present absorptive capacity of firms regarding a sole loan or credit instruments is limited.

## 7. Evaluation of the Ex-Ante Assessment Fraunhofer IMW, Germany

One of the German partners in FIRECE is Fraunhofer IMW, the Fraunhofer Center for International Management and Knowledge Economy. The evaluation of the designed innovative FI is based on the reports "Preparation of PA 1: CE Ex-Ante Assessment Analysis report (Saxony, Germany) D.T2.1.2" and "Finalisation of the ex-ante assessment. Analysis and implementation of the FI in Germany D.T2.4.1".

### 7.1 Summary of the Proposed Financial Instrument

The Saxon partner proposes an innovative combination of public grant and a loan financed through a lending-based crowdfunding campaign. The construction is called matchlending, which targets Saxon SMEs and has an aim to contribute to the FIRECE goals. It also completes two of the major problems for small and medium-sized enterprises with

public funding; namely the complex regulations and the challenging conditions/requirements among the many current funding instruments.

The construction is linked to the capital market, which is a desirable solution. Efficiency in the allocation of financial resources and acquisition of additional private funds for FIRECE objectives can be advantages of the proposed matchlending.

The reason for the grant element of the FI is that investment projects in the field of energy efficiency are often not profitable enough to attract investors on the capital markets. This also applies to finance CO2-reducing investment projects via lending-based crowdfunding. The subsidy improves the profitability of the project, lowers the risk/return ratio; thus, the investment can become competitive in the capital market.

## 7.2 Quantitative Evaluation

Table 8: Quantitative evaluation of Fraunhofer IMW's FI

No	Evaluation areas and evaluation criteria	Max. score	Obtained score
<b>1. Scope of the assessed financial instrument</b>		<b>10</b>	<b>8</b>
1.1	Is the size of funding differentiated according to the project size of the beneficiaries?	2	2
1.2	Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1
1.3	What kind of projects can be financed by the designed FI?	2	1
(1.4)	Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2
(1.5)	Novelty of FI regarding target group or supported activity	2	2
<b>2. Value added of the financial instrument</b>		<b>10</b>	<b>8</b>
2.1	Is there a qualitative analysis of the value added?	2	2
2.2	Are multiplicative or leverage effects estimated?	2	0

2.3	Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1
(2.4)	Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1
(2.5)	Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	4
<b>3. Assessment of the additional resources</b>		<b>10</b>	<b>9</b>
3.1	Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical size of the financing is also given)	2	2
3.2	Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	1
3.3	Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fond or managing authority) (1-1 for each mentioned program, max.3)	3	3
(3.4)	Are there existing private financial products described available at any level of FI? (1-1 for each mentioned product, max.3)	3	3
<b>4. Incorporation of previous experiences</b>		<b>15</b>	<b>15</b>
4.1	Does the report contain an overview of existing funding opportunities? (1-1	5	5

	point for each of the mentioned, max. 5)		
4.2	Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	5
4.3	Does the report explicitly identify failures of previous financing opportunities? (0 - no, 1 - short overview, 2 - detailed analysis)	2	2
(4.4)	Does the proposed FI give an adequate answer to these failures? (0 - no, 1 - yes)	1	1
(4.5)	Does the report contain a detailed market gap analysis? (0 - no, 1 - general, qualitative information, 2 - demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2
<b>5. Proposed investment strategy</b>		<b>10</b>	<b>7</b>
5.1	The total volume of financial subvention (0 - not given, 1 - given, 2 - given and explained)	2	0
5.2	Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 - no, 1 - yes)  Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 - no, 1 - yes)	2	2
5.3	Is the proposed construction compatible with the applicable state aid rules? (0 - no or not assessed, 1 - yes, explained)	1	0
(5.4)	Is the FI innovative? (1-1 for each of the constructions, max. 3 points)	3	3

(5.5)	Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2
<b>6. Expected results of the financial instrument</b>		<b>15</b>	<b>4</b>
6.1	Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)	2	1
6.2	Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)	2	0
6.3	Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	0
(6.4)	Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points):  Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI shorten the payback period of the investment?  Does the project create new sources of revenue for beneficiaries/increase revenue?	4	3
(6.5)	Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	0
<b>7. Involvement of stakeholders</b>		<b>15</b>	<b>14</b>
7.1	Does the report identify the most important stakeholders of the project? (0 – no, 1 – yes, 2 – stakeholders and	2	2



	their relation to the project is also defined)		
7.2	Is the sphere of actions of MA and other authorities defined? (0 – no, 1 – partially, 2 – principles of cooperation as well, 3 – entirely)	3	2
7.3	Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5)	5	5
(7.4)	Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5)	5	5
<b>8. Transferability</b>		<b>15</b>	<b>13</b>
8.1	Are the results of the study based on qualitative research? (0-6: 0 – only desktop research with less than 5 external citations, 1 – desktop research with 5-15 external references, 2 – desktop research with more than 15 external references, +1 – interviews with experts, +1 – workshops, +1- any other kind of qualitative research)	6	4
8.2	Are the findings of the study based on quantitative research? (0 – no quantitative methodology, 1 – survey with a sample size less than 50 or without any information on sample size, 2 – survey with a sample size larger than 50, 3 – survey with a representative sample)	3	3
8.3	Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1-partially; 2 – detailed)	2	2
(8.4)	Will the construction provide a knowledge base transferable to other	2	2

	regions? (0 - no; 1 - partially, 2 - entirely)		
(8.5)	Will the construction provide a knowledge base transferable to other member states? (0 - no; 1 - partially, 2 - entirely)	2	2
<b>TOTAL SCORE</b>		<b>100</b>	<b>78</b>

Source: own table

### 7.3 Summary of the evaluation areas and justification

The most innovative FI is based on a rather heterogenic assessment. The potential in crowdfunding and the past experiences are deeply worked out, but some basic aspects like what kind of expected results are generated by the FI or how it fits the energy efficiency related public measures in Saxony, are less underpinned.

This heterogeneity in the quality of different parts of the ex-ante assessment contributes to the moderate final score. The scores could be easily improved if the partner answered the questions of evaluation criteria not covered in the report.

#### 7.3.1 Scope of the Assessed Financial Instrument

The proposed matchlenging targets Saxon SMEs to finance energy efficiency and low-carbon economy. The crowdfunding part of the FI allows to design the loan element suitable to the needs of the applicant; the volume of the loan is perfectly fitted to the beneficiary's project characteristics. The FI does not make a distinction between applicants with and without experiences in energy efficiency projects; the viability of projects is tested during the crowdfunding campaign.

However, the volume of available financing opportunities for Saxon SMEs is considered to be sufficient; the terms and processes of financing can often result in unsatisfied demand for external resources. (See the results of the survey conducted among Saxon SMEs.)

#### 7.3.2 Value Added of the Financial Instrument

A classical assessment of value added and the identification of value drivers is not provided in the report. But some of the questions of the criterion can be answered based on the available information.

The SWOT-analysis, especially the chances detected by the assessment can be interpreted as a kind of added value analysis. The report D.T.2.4.1. at page 31 in Figure 14. contains the following overview on the strengths, weaknesses, opportunities and threats related to the designed FI. (See Figure 2 on the next page)

Unfortunately, neither the SWOT-analysis nor the remaining part of the reports does contain a quantitative analysis of value added. Multiplicative or leverage effect is not calculated in the ex-ante assessment. Thus, the partner can achieve further improvement in his scores if some additional information will be provided on the quantitative dimension of value added. The same applies to the question of whether the proposed FI is consistent with other forms of interventions on the region.

However, the FI contains a revolving element, and theoretically, this contributes to the increase of the added value, but in case of the given construction, this question is not relevant because the loan element of the construction comes from private investors.

Figure 2: SWOT analysis of matchlending

Strength	Weaknesses
<p>Lower cost of financial intermediation</p> <p>Lower transaction cost</p> <p>More diverse financing markets for SMEs</p> <p>Larger volume of debt capital available for SME</p> <p>Back to Basics – financier as direct enabler</p> <p>Short time span from first contact until the loan pay out is received</p> <p>No necessity of collateral</p> <p>Flexibility, premature repayment</p>	<p>Two intermediaries that take their fee and there could be additional effort required depending on the exact structure of the financial instrument</p> <p>Potential Bankruptcy of the platform</p> <p>Previous research was done only in a boom phase</p> <p>Funding is uncertain</p> <p>No disclosure standard for information about borrowers or platforms credit assessment and therefore a lack of comparability of investment options between the platforms</p> <p>Fear of failure -&gt; the initiator is afraid, that an unsuccessful crowdfunding campaign will damage its image or it will show that he needs money</p>
Chances	Risks
<p>Energy efficiency is an issue very appropriate for crowdfunding</p> <p>Additional financial sources because of the promising incentives of the crowdfunding – higher interest rates as bank interest rates in case of savings account</p> <p>In some countries there are special legislative amendments enabling and simplifying this kind of financing especially in the case of crowdfunding</p> <p>Some of the actual problems and challenges regarding the SMEs and financing the energy efficiency measures could be minimized (e.g. share of own financial contribution, complicated and slow bureaucracy, challenging conditions/ requirements)</p> <p>Limitation of the information asymmetry</p> <p>Only projects with a high potential of success are shown on crowdfunding platform (important for</p>	<p>Adverse incentive platform vs. crowd</p> <p>Adverse incentive institutional vs crowd</p> <p>In case of crowdfunding campaign failure there are only additional cost and effort but no financing</p> <p>Damage of the image -&gt; if some implementation of such a combination had a bad experience at the beginning, the concept will suffer in general the negative image</p> <p>Too many crowdfunding platforms -&gt; strong competition among the platforms, not clear which is better for a specific issue</p>

Source: Report D.T.2.4.1. at page 31 in Figure 14.

The construction definitely sets lower barriers to entry for applicants than other existing financial products available on the market. The construction contains a grant element, a short approval process is assured and the application process is simple.

These characteristics of the FI are sufficient to weaken barriers for new participants because targets do not see a particular problem in the mere extent of the financing offered, but rather in the related aspects, such as bureaucracy, regulation and conditions attached.

### 7.3.3 Assessment of the Additional Resources

The crowdfunding element of the proposed FI makes the question of additional resources less important than in case of pure public funds where the financial efficiency of the planned intervention also depends on its ability to accelerate the additional investments of private investors.

Behind the financial resources not dedicated for special purposes, SMEs have access to different forms of FIs and private products which are related especially to energy investments. Figure 3 provides a collection of these constructions which can be considered in some cases as potential resources of additional capital to the energy related projects financed by the designed FI. In the subchapter assessing previous experiences (7.3.4), we provide a summarizing figure on different public funding opportunities for Saxon SMEs at European, national and regional level (See Figure 4).

Figure 3: Public funding opportunities for Saxon SMEs



Source: FIRECE D.T.2.4.1. report page 10, Figure 2

Because the crowdfunding element of the FI already attracts additional private resources to the funds coming from the Union; the information that can be evaluated and scored in this 7.3.3. subchapter is rather limited. There is no estimate on the leverage created by additional resources.

### 7.3.4 Incorporation of Previous Experiences

The overview of previous experiences is a detailed and focused part of the Saxon partner’s report. In some of the reports the assessment of energy consumption was not an

accented part of the analysis, but the Saxon partner provided a profound description of these questions as well. Germany has seen a positive development in the area of energy supply and energy efficiency. The number of national and regional policy incites sustainable economic development. Nevertheless, the energy supply, as well as the energy efficiency among the SME in Saxony, is still not optimal and more efforts are needed, and there is still a large potential in energy savings: for example, in Saxony, the highest potential for saving electricity for SME is about 5 and 10%, and the highest energy saving potential for heat by SME is between 5% and 10%.

As all the reports, the German assessment also contains an overview of existing funding opportunities, especially programs financing energy related projects. Figure 4 illustrates these financial resources available to SMEs to invest in energy efficiency. (See FIRECE D.T.2.4.1. report page 10, Figure 2)

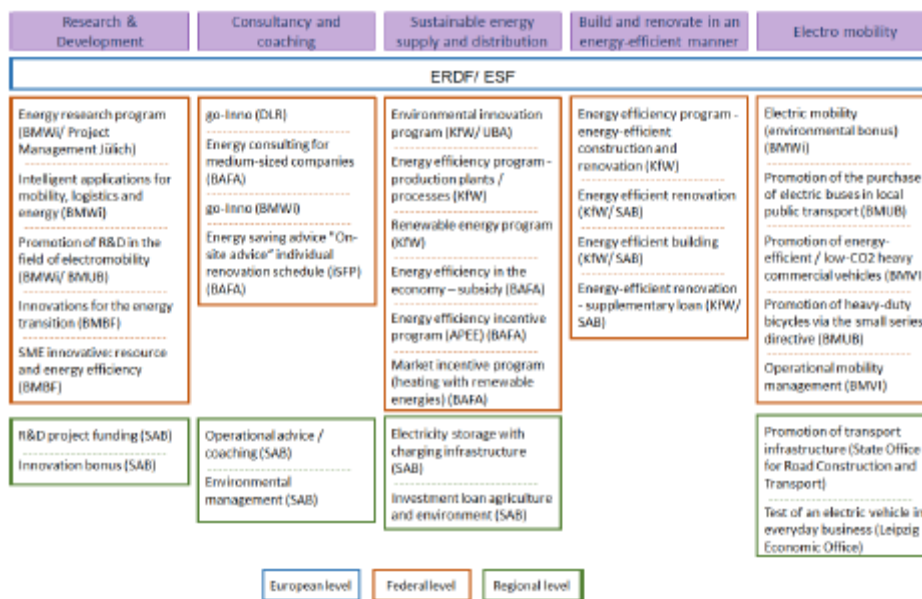
The market failures are discussed from a very theoretical point of view. The assessment starts with the statement that “fully competitive markets, goods are allocated to the demanders with the highest reservation prices, until that unit that is more costly to supply than the demander is willing to pay for it”. After then using the argumentation applied in microeconomics, the supply side failures are derived through the difference between private and social marginal costs of providing green finance instruments. Some more practical details on market failures come from the results of a survey conducted by the partner, Fraunhofer IMW among Saxon SMEs and other stakeholders on the challenges Saxon SMEs facing regarding sustainable investments. Supply side failures are identified as follows:

- ◆ Complicated and slow bureaucracy
- ◆ Complex regulations
- ◆ Challenging requirements like too complex applications forms, high minimum project volume
- ◆ Insufficient incentives like the price of conventional sources still low, insufficient level of taxes, missing CO2 emission trading

Demand side failures are related to the target group and constraints of potential beneficiaries:

- ◆ Limited management capacity
- ◆ Lack of time
- ◆ Lack of experience, knowledge and confidence (technological issues!)
- ◆ Transaction costs
- ◆ Asymmetric information

Figure 4: Financial resources available to Saxon SMEs to invest in energy efficiency



Source: FIRECE D.T.2.4.1. report page 11, Figure 3

The question of market gap analysis is also discussed in the report. As outlined several times in the Saxon report, a variety of different financial instruments at the European, national and regional level are available to SMEs for the financing of sustainable investment projects. Even the survey conducted by the partner concluded that the pure extent of the supply is sufficient. The report also mentions that relatively cheap sources from the European Central Bank (ECB) has been provided to the European financial markets and the low interest rate policy by the ECB incite investors to finance relatively risky financial assets. So we can conclude that the supply side problems do not consist of the available volume of funding opportunities.

Thus, there is a need for approaches and financial instruments tailored to the needs of SMEs that are more transparent, less time-consuming and more accessible than the existing offer. The proposed FI is able to give an adequate answer to the above-mentioned market failures. More details on this question are under the criterion of added value.

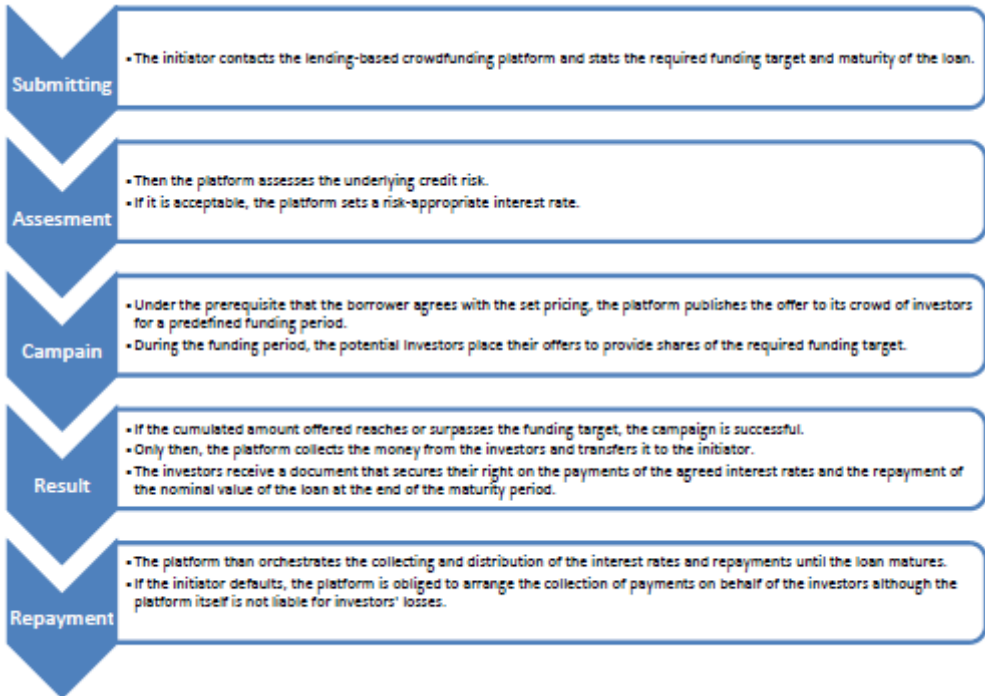
After a summary on classical forms of financing, the report also contains a short research on the question of how crowdfunding can contribute to financing energy related projects of SMEs in Germany. From the total sector (129 German crowdfunding platforms), 35 platforms were considered as relevant in energy efficiency campaigns. A total sum of 3.174 campaigns was screened, and 76 of them were matching with the aim of the partner's analysis. The raw data documented include: name and type of the platform, funding goal meaning type of energy efficiency measure, which should be financed, the target sum and the funding sum as well, the funding period (the time needed for reaching the target sum) and finally the industry sector the company is active. The results of the quantitative analysis are important inputs of the design process of FI: the preferred form of financing (equity vs loan), activity financed from the campaign, typical value and the

frequency distribution of target sum, conditional expected value of target sum depending on the scope of the financed project, the length of funding period varying with the sectorial differences etc.

### 7.3.5 Proposed Investment Strategy

The proposed FI is a combination of a grant as a classical financial tool of low-carbon measures and of a loan financed through a lending based crowdfunding campaign. The FI consists of two separated elements: one part of the applicant’s project will be funded by lending based crowdfunding, and the second part of the project is financed by a subsidy element. These two parallel processes can be studied in Figure 5. The rather detailed figure (Figure 5) shows the process of how the FI will work from the application until the repayment of the loan.

Figure 5: The financing process in matchlending



Source: FIRECE D.T.2.4.1. report page 28, Figure 13

The innovation of the FI consists of several aspects. The crowdfunding element reaches private investors and is able to combine EU resources with additional private resources; thus, the achieved leverage can be increased by this construction. The crowdfunding element can be a well-tailored solution to the special needs of applicants (repayment terms, the volume of the projects, payback period).

However, the proposed FI, the so-called matchlending is the most innovative one among the assessed FIs, the investment strategy should have been developed more deeply. Neither the total volume of subvention nor the average projects size is available in the report.

Nevertheless, the partner admits that the concept should be critically assessed one more time and some details respectively adjusted to the specifics of the authority and platforms behind the financial instrument, before introducing and implementing the concept of the IFI.

### 7.3.6 Expected results of the Financial Instrument

The expected results generated by the designed FI can be evaluated by the following criterion (see subchapter 1.1.6):

1. Number of approached agents of the target group (0 – no information, 1 – information on the total size of the target group, 2 – information on the approached targets)
2. Number of supported beneficiaries (0 – no information, 1 – given, 2 – estimated or explained)
3. Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)
4. Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points)
  - 4.1. Does the project decrease energy expenses?
  - 4.2. Does the project increase competitiveness?
  - 4.3. Does the FI shorten the payback period of the investment?
  - 4.4. Does the project create new sources of revenue for beneficiaries/increase revenue?
5. Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)

Unfortunately, the Saxon report does not provide any information on the above-listed aspects; we just assumed that the criterion 4.1-4.3. are met. The scores obtained by the ex-ante assessment could be significantly improved if the partner presented more estimates on potential results of FIRECE project.

### 7.3.7 Involvement of Stakeholders

The first aspect of stakeholders' participation is the involvement in the design process of the FI. As the partner reports, a primary research took place where Fraunhofer IMW has conducted a survey among Saxon SMEs and other stakeholders (financial institutions, managing authorities, etc.) on the challenges SMEs facing regarding sustainable investments.

In the secondary desktop research, the report identified and assessed the aspects of the following stakeholders:

I. Supply side stakeholders:

- ◆ Public sector funding institutions;
- ◆ Public-private EE or RE funds;



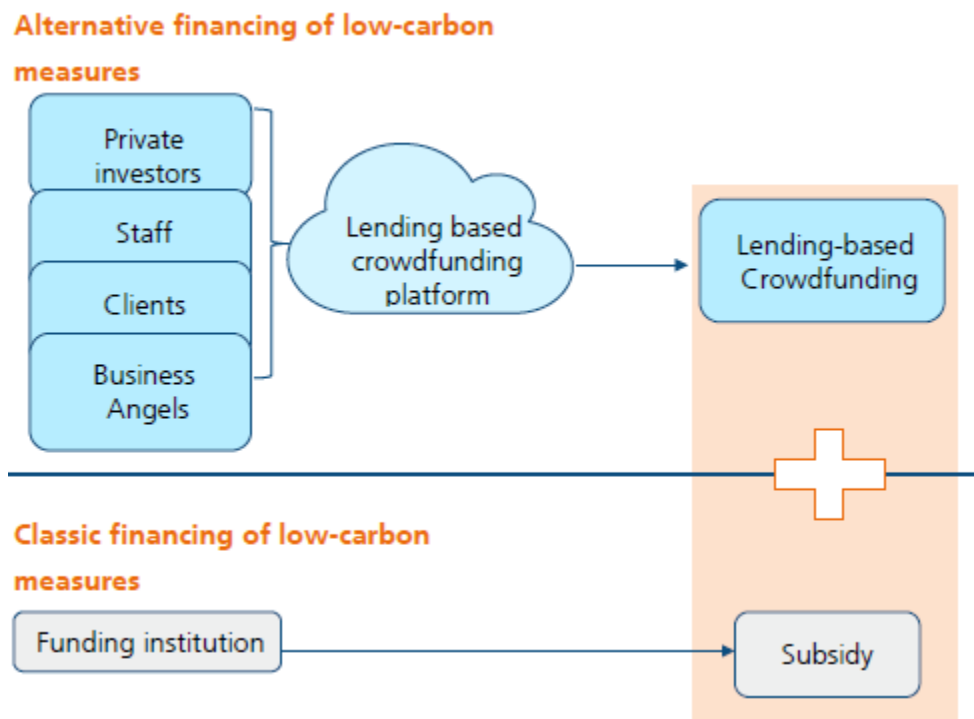
- ◆ Existing EU FIs; d. Commercial banks;
- ◆ Development banks;
- ◆ Venture capital institutions;
- ◆ Leasing and factoring companies;
- ◆ Institutional investors.

II. Demand side stakeholders:

- ◆ SMEs

A less covered topic within this criterion is the role of stakeholders in the implementation of the FI. The targets are Saxon SMEs; the roles and responsibilities of other stakeholders are illustrated in Figure 6.

Figure 6: Roles and responsibilities of stakeholders



Source: FIRECE D.T.2.4.1. report page 24, Figure 12

### 7.3.8 Transferability

The first question when considering transferability is the assessment of the applied methodology. The partner conducted a survey among Saxon SMEs and other stakeholders (financial institutions, managing authorities, etc.) on the challenges SMEs facing regarding sustainable investments. However, the quantitative research can provide the mathematical and statistical background of generalisation, the number of participants is not known and therefore the results of the survey can be limited to those who participated in the research.

The quality of secondary research based on the documents and market data enabled to arrive to valid conclusions and to use the results in the design process.

Foreign good practices are also mentioned when describing the development of crowdfunding.

If the applied methodology theoretically allows the generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. The proposed FI shows a high level of innovation and can become a valuable good practice for countries where the crowdfunding market segment is developed enough and disposes of a sufficient market share to build a FI on it.

## 8. Overall Evaluation of the Ex-Ante Assessments

According to the short overview on the FIRECE Project at homepage (<https://www.interreg-central.eu/Content.Node/FIRECE.html>), „the project aims to contribute to the implementation of the Regional Energy Plans and contribute to achieving the targets (in terms of Energy savings and RES) planned at EU and National Level... Enterprises located in partner countries will be assisted to apply to the innovative financial instruments with assessed investment plans. With the Innovative Financial Instruments, partner regions will improve their capacity to meet Energy savings and RES targets according to their Regional Energy Plans and will contribute to reaching the targeted % of savings and reduction of fossil fuel by Industry.”

The designed FIs will be able to contribute to the FIRECE goals. They reflect not only the above-cited aims but also they are derived from the local market failures and special needs of regional/national SME sector. Thus, the findings regarding the reasons of financing gap and credit rationing show certain similarities; there is a chance that the assessed six constructions can be partially or entirely transferred as good practices to partner countries. The differences of FIs are usually due to the different level of economic development and market situation: in Istria is a grant element crucial to help targets to absorb the FI, but in the case of Germany, targets are already able to make use of matchlending and to apply for a lending-based crowdfunding element.

The scoring of the six FIs shows a moderate variance. (See Table 9) The most established assessment was conducted by the Polish, Istrian and Hungarian partner. Their score nearly reaches 90% of the maximum scores. In the case of two innovative solutions, the Italian and the Saxon (German) report can be improved by simply providing more information on the lowly scored criteria. In the case of Upper Austria, there are three criteria (value added, additional resources, expected results) where a deeper assessment can help to achieve a more favourable final score.

The most successful parts of their ex-ante assessments were covering previous experiences, the involvement of stakeholders and transferability. Large heterogeneity appeared when partners assessed value added and additional resources. In the case of Austria and Saxony, the expected results were only partially part of the report, but in the remaining four reports expected results were sufficiently explained. Proposed investment strategy and scope of the FI are generally appropriately covered by the partners.

Table 9: Scoring of FIs according to the criterion “Scope of the assessed FI”

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
1. Scope of the assessed financial instrument	10	7	9	8	9	9	8
2. Value added of the financial instrument	10	5	9	9	10	9	8
3. Assessment of the additional resources	10	5	9	9	7	8	9
4. Incorporation of previous experiences	15	12	13	12	15	15	15
5. Proposed investment strategy	10	7	8	10	8	8	7
6. Expected results of the financial instrument	15	5	14	10	13	11	4
7. Involvement of stakeholders	15	15	13	12	14	15	14
8. Transferability	15	12	14	11	14	14	13
	<b>100</b>	<b>68</b>	<b>89</b>	<b>81</b>	<b>90</b>	<b>89</b>	<b>78</b>

Source: own table

## 8.1 Scope of the Assessed Financial Instrument

The main focus of FIRECE is to develop FIs which contribute to the low-carbon energy transition by the Industrial sector among small and medium-sized enterprises (SMEs) in CE area. This primary focus has been tested in this first evaluation criterion.

A well designed FI should be suitable for the current economic development of the country and to the typical life cycle and financial needs of target group while it should also harmonize with the European, national and regional directives and strategies concerning the potential beneficiaries at the same time.

To summarize how the partners defined the scope of their FIs see Table 10.

Table 10: Scoring of FIs according to the criterion “Scope of the assessed FI”

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
1. Scope of the assessed financial instrument	10	7	9	8	9	9	8

Is the size of funding differentiated according to the project size of the beneficiaries?	2	2	2	2	2	2	2
Is there a distinction between applicants with and without experiences in energy efficiency projects?	2	1	2	1	1	1	1
What kind of projects can be financed by the designed FI?	2	1	1	1	2	2	1
Can the financial needs of the target group be satisfied by existing financial products and subsidy programs for financing?	2	2	2	2	2	2	2
Novelty of FI regarding target group or supported activity	2	1	2	2	2	2	2

Source: own table

As the scores show, all the designed FIs overcome a rather general market failure which is that projects of lower volume are not covered by existing financial solutions. In the Polish proposition, there is an additional guarantee element which also considers the special needs of micro firms.

Energy related projects often need high level technology; thus, the choice between technological solutions, the design of the financed investment and finally the whole rentability or viability can depend on the professional expertise of project design. Therefore, it is an important result that all the constructions have more or less constructional elements which contribute to the quality of the projects. Several FIs include a consultancy service which is a good practice and is worth to overtake by other partners: the Hungarian, Polish and Italian constructions incorporate an energy audit element which assures the quality of energy investments.

Usually, the designed interventions harmonize with the aims of FIRECE. In the case of Poland and Croatia, the aims are not only consistent with FIRECE goals in general but also are derived from national or regional strategic programs or documents. For example, the aim of the Polish financial instruments is to close the funding gap in the areas of Measure 4.2. of ROP Priority Axis 4 Environmentally friendly energy (“Renewable energy production in enterprises”) and of Measure 5.1 of ROP Priority Axis 5 Energy efficiency and low-emission economy (“Improving the energy efficiency of enterprises”).

Only Upper Austria decided to define a more general scope of the project; Upper Austrian SMEs can finance by the designed FI projects in the information and communication technologies (ICT), life sciences, mechatronics and process automation, energy (energy efficiency, energy management and renewable energies), materials/lightweight construction and logistics sectors and corporate networks. Italy also allows a minimal

diversion to FIRECE goals. The Italian loan element aims to promote the creation of new businesses and the growth of SMEs, the EE processes in enterprises (including SMEs) and self-production of energy from RES in order to increase their competitiveness. The Italian FI should also encourage business investment in industrial research programmes.

The financial needs of targets are usually partially unsatisfied. Underinvestment or credit rationing have different reasons; the assessment of market failures will be part of the overview of previous experiences.

The novelty of the proposed FI shows moderate differences. For example, a significant market gap can be narrowed by re-launching Upper Austrian High-Tech Fund; however, the novelty of target group or that of the supported activity is only partially approved, because an already existing program will offer financing to a target group (SMEs) already covered by several programs in Austria. The opposite side can be the Italian partner where several innovative elements are an inherent part of the construction: The technical assistance unit of the Italian FI helps to overcome the lack of funds for energy audits. The target group is wider than in other constructions, final Italian beneficiaries of the loan instrument are enterprises, SMEs, area companies, production area managers and ESCOs. The guarantee elements target SMEs, ESCo including, individually or in an association, professionals and their associations. But there are still other novelties in the proposed FI, the possibility of using crowdfunding as a loan instrument and the potential use of EPC (Energy Performance Contracts).

### 8.2 Value Added of the Financial Instrument

The aim of all financial decisions is to attain the highest return or gain in the wealth of the investor possible by one unit of investment at a given level of risk. The added value (VA) of the FI can be considered similarly: partners design solutions which are maximizing the added value while minimizing the risk of related negative phenomena.

The added value can be interpreted in several ways. The financial results of FI are primarily the multiplier and the leverage effect. Compared to the financial, quantitative effects, the qualitative dimension of value added consist of broad socio-economic consequences. The qualitative analysis expands to all the changes that take place in the real economy as a result of using financial instruments. An overview of the assessed aspects of value added and the performance of designed constructions can be found in Table 11.

Table 11: Scoring of FIs according to the criterion “Assessment of Value Added”

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
<b>2. Value added of the financial instrument</b>	<b>10</b>	<b>5</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>8</b>
Is there a qualitative analysis of the value added?	2	2	2	2	2	2	2

Are multiplicative or leverage effects estimated?	2	1	1	2	2	2	0
Does the FI contain a revolving element thus increasing (the value added) the number of projects and the total amount of investment till and after the end of the program?	1	1	1	1	1	1	1
Is the proposed FI consistent with other forms of interventions and measures in the region?	1	1	1	1	1	1	1
Does the FI set lower barriers to entry for applicants than other existing financial products available on the market?	4	0	4	3	4	3	4

Source: own table

As the scores illustrate, all the partners managed to prepare a qualitative analysis of the value added. Consistency with already running interventions is proved in all the reports as well.

The general findings of qualitative value added are an increase in the number and amount of investments, the reducing of energy related costs of beneficiaries and enhancing their competitiveness. Indirectly the FIRECE product can contribute to the EU objectives and to national energy strategy and action plan. Increasing the competitiveness of the European economy or achieving energy, climate and environmental objectives are indirectly all enhanced by the proposed FIs. If the FI contains a grant element, it is supposed to encourage targets to absorb the loan element with the financial instrument. Several reports conclude that the FI enables investment projects which would not take place otherwise.

The quantitative analysis of value added remained in some of the reports limited. For example, the Saxon assessment does not provide any information on the achievable leverage. (But we have to remember that the Saxon construction incorporates private resources into the FI through the use of crowdfunding; thus, a certain level of leverage is by definition achieved.) In several cases just illustrative leverage calculations are available – see for example the Hungarian partner where the report compares two constructions the repayable and the fixed interest rate supported FI by an illustrative calculation of leverage and value added. A more funded calculation is published by the Italian partner. According to their results, equity based products can achieve a leverage of 20, which means that 5 million EUR of public funds can finally active an investment in a total volume of 100 million EUR. The leverage effect of loan programs is estimated to equal 10-15. The guarantee can create an investment 6.25-10 times higher than the amount of the guarantee itself.

Most of the constructions contain 3 or 4 elements which help to set lower barriers to entry for applicants than other existing financial products available on the market. The Istrian FI concentrates on the financial figures of Istrian firms which do not allow them to apply for external financing, for financial instruments. Their high debt ratio, low liquidity and uncertain rate of return on energy projects discourage commercial banks from financing Istrian SMEs. Thus, the grant element of the Istrian FI enables investment projects which would not take place otherwise. In this aspect, the grant element sets lower barriers to entry for applicants than other existing financial products available on the market. The innovative Saxon FI sets definitely low barriers for targets. Also, the Saxon construction contains a grant element, a short approval process is assured, and the application process is simple. These characteristics of the Saxon FI are sufficient to weaken barriers for new participants because targets do not see a particular problem in the mere extent of the financing offered, but rather in the related aspects, such as bureaucracy, regulation and conditions attached. The complex solution of the Hungarian FI is the following: An important value driver of a FI is how it lowers barriers to entry for applicants. Services of component 'A' give an adequate answer to lack of management skills of Hungarian SMEs. A simplified application and a shorter approval process for all audited firms under component 'A' lighten the administrative tasks of future beneficiaries. The grant element respects the limited own contribution capacities of applicants while preferential loan decreases the burdens of debt service.

### 8.3 Assessment of the Additional Resources

The leverage and multiplicative effect of the FI is assessed in several evaluation criteria. But to achieve the forecasted leverage and multiplication, the source of additional financing should be deeply explored. Possible constructions in the private and public sector are interesting elements of this analysis. However, more important information is the available volume of financing opportunities as it can be a constraint in this aspect. Table 12 collects the scores related to this evaluation criterion.

Table 12: Scoring of FIs according to the criterion “Assessment of the Additional Resources”

<b>Evaluation areas and evaluation criteria</b>	<b>Max. score</b>	<b>Austria</b>	<b>Hungary</b>	<b>Italy</b>	<b>Poland</b>	<b>Croatia</b>	<b>Saxony</b>
<b>3. Assessment of the additional resources</b>	<b>10</b>	<b>5</b>	<b>9</b>	<b>9</b>	<b>7</b>	<b>8</b>	<b>9</b>
Is there an estimate on the available volume of financing opportunities on the market? (Total volume or average amount) (0 – no, 1 – yes, one of the figures is given; 2 – yes, volume and average or typical	2	0	2	2	0	2	2

size of the financing is also given)							
Leverage achieved by additional resources (0 – not mentioned, 1 – mentioned but not estimated, 2 – estimated)	2	2	1	2	2	1	1
Are there existing public programs or products described available at any level of FI? (final recipient, financial instrument, fond or managing authority) (1-1 for each mentioned program, max.3)	3	2	3	4	3	3	3
Are there existing private financial products described available at any level of FI? (final recipient, financial instrument, fond or managing authority) (1-1 for each mentioned product, max.3)	3	1	3	1	2	2	3

Source: own table

The estimation of the available volume of financing opportunities on the market as an upside constraint of external resources is less discussed in most of the reports. The potential leverage increasing effect of additional resources is usually discussed in the calculation of leverage (see criterion „Assessment of Value Added”).

The most successful part of the present evaluation criterion has been the overview on the available public programs. Several private products are mentioned as well in the assessment of additional funding, but the way how they can be attached to the FI is less frequently treated.

Thus, for further improvement of reports, it is important to note that it would have been useful to cover not only the identification of existing additional resources but also to build a concept how they can be used within FIRECE projects.

## 8.4 Incorporation of Previous Experiences

The first step in the design process of an innovative product is to collect all the relevant previous experiences. Relevant experiences come from all private and public financing opportunities offered to SMEs. A separated supply and demand side assessment helps to explore potential market failures and to estimate the market gap, the missing part of external financing in SMEs’ activity. Not only reports on good practices but also pitfalls of previous programs are important to find a suitable construction to the target group. In all



the reports, the partners managed to provide a detailed overview of relevant market information from a critical point of view. In Table 13, the scores reflect the successful assessment of previous experiences.

Table 13: Scoring of FIs according to the criterion “Incorporation of Previous Experiences”

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
<b>4. Incorporation of previous experiences</b>	<b>15</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>15</b>	<b>15</b>	<b>15</b>
Does the report contain an overview of existing funding opportunities? (1-1 point for each of the mentioned, max. 5)	5	5	5	2	5	5	5
Does the report contain an overview of previous energy efficiency programs? (1-1 point for each of the mentioned, max. 5)	5	2	3	5	5	5	5
Does the report explicitly identify failures of previous financing opportunities? (0 – no, 1 – short overview, 2 – detailed analysis)	2	2	2	2	2	2	2
Does the proposed FI give an adequate answer to these failures? (0 – no, 1 – yes)	1	1	1	1	1	1	1
Does the report contain a detailed market gap analysis? (0 – no, 1 – general, qualitative information, 2 – demand and supply side information separately, or quantitative estimation of market gap/ financing need)	2	2	2	2	2	2	2

Source: own table

The most detailed part of this criterion was usually the overview of running or previous public programs. Partners provided not only a survey on available public opportunities to finance the target group in general and to obtain external financing to cover special energy related projects but also the pitfalls of such programs were detected.

There are several similarities among the findings which can be structured the following way:

- ♦ structural macro-economic failures: negative externalities;

- ♦ demand-side market failures: asymmetric and imperfect information, the small size of projects and high transaction costs, scarcity of investment-ready projects, problems of creditworthiness of company;
- ♦ supply-side market failures: lack of access to appropriate finance, suboptimal investment situations, very strict project evaluation and selection criteria, mismatching in the timing of disbursement.

An important phenomenon is that energy needs of firms are a crucial part of their competitiveness; however, they often have no information on their real energy costs. Thus, if they start ad hoc energy efficiency projects firms pay a high price for energy savings due to their incoherent energy efficiency plans. Any kind of consultancy or compulsory energy audit elements can overcome the insufficient management skills and information on energy investments; therefore, they should be useful elements of FIs designed in the framework of FIRECE project.

A common challenge of several countries is the role of grants within public programs. Generally, financial instruments are usually less popular than grant programs. More precisely, empirical data shows that the demand for financial instruments increases after grants had been exhausted from the market. But a revolving element of the FI is not only important because of its multiplicative effect, but it also has a sever incentive effect on beneficiaries' efforts to succeed in their projects. A grant element is important in all market situations where the viability of projects or the creditworthiness of targets is limited. But in the more developed partner countries (see Austria), where equity financing is also appropriate behind loan elements, grants have less significant role in the construction.

## 8.5 Proposed Investment Strategy

The proposed investment strategy is a cornerstone within the ex-ante assessment reports prepared by the six FIRECE partners. As a summary for this evaluation criterion, here follows a short overview of the elements of the construction, on the total volume of financing, if available in the original report. Table 14 summarizes the detailed aspects and scores within the criterion.

Table 14: Scoring of FIs according to the criterion "Proposed Investment Strategy"

<b>Evaluation areas and evaluation criteria</b>	<b>Max. score</b>	<b>Austria</b>	<b>Hungary</b>	<b>Italy</b>	<b>Poland</b>	<b>Croatia</b>	<b>Saxony</b>
<b>5. Proposed investment strategy</b>	<b>10</b>	7	8	10	8	8	7
The total volume of financial subvention (0 – not given, 1 – given, 2 – given and explained)	2	0	1	2	0	2	0

Does the proposed FI contain any incentive for applicants to launch only viable projects? (0 – no, 1 – yes) Does the FI deal with informational asymmetry, and can the proposed construction contribute to decreasing credit rationing? (0 – no, 1 – yes)	2	2	2	2	2	2	2
Is the proposed construction compatible with the applicable state aid rules? (0 – no or not assessed, 1 – yes, explained)	1	1	1	1	1	1	0
Is the FI innovative? (1-1 for each of the following, max. 3 points: crowdfunding, consultancy, construction linked to Energy Performance Contract, other innovative solution)	3	2	2	3	3	1	3
Does the FI reflect a longer payback period of energy efficiency projects? (0 – no, 2 – yes)	2	2	2	2	2	2	2

Source: own table

♦ **Austria: venture capital and loan element**

The Austrian FI aims to narrow the gap in venture financing young, highly innovative and growth-oriented companies in Upper Austria. The Federal Province of Upper Austria intends to re-launch the Upper Austrian High-Tech Fund which offered typical and atypical silent partnerships, open participations in the basic or share capital as well as limited liability capital and loans with profit participation or subordinated loans. To illustrate the possible available volume of financing we only have indirect information. Namely, the partner reports that the scale of ESIF interventions in Austria (EU + national) in the current programming period shows a lower volume compared to previous periods (see figures in the 2. part of present report). We may conclude that the newly planned fund is designed with participation ratios of 1/3 (participating banks) and 2/3 (Federal Province of Upper Austria or ERDF). In the case of equity capital from EUR 250,000 up to EUR 1.5 million will be provided to beneficiaries but on the size of loans offered there is no available calculation in the report.

- ◆ **Hungary: grant and state-supported credit facilities and compulsory energy audit**

The Hungarian partner designed an innovative two-component FI which targets every SME in Hungary. In component 'A' an energy audit will be prepared to every beneficiary company as an indirect subvention. In component 'B', all audited SMEs can apply for a combined financial solution. The financing is composed of grant and state-supported credit facilities. Component 'A' will audit 300 SMEs in the first phase of the project, and component 'B' will support 250 of investment projects. The total volume of financing is 4.0 billion HUF for component 'A' and 25.0 billion HUF for component 'B'.

- ◆ **Italy: loan plus guarantee instrument with free consultancy element**

The Italian partner designed an innovative construction combined from a loan instrument and a guarantee instrument. As the third part of the construction, here again, a free consultancy element, a so-called technical assistance unit helps beneficiaries to improve their project quality and reduce project risk.

The loan element will consist of initial public funding of EUR 26.6 million increased by the tranche for outright grant assistance to final recipients and the tranche for interest rate subsidy. For the guarantee fund, there is a total budget of EUR 35 million available. Finally, the Technical assistance unit disposes of capital of EUR 10 million which equals to approximately 4-10% of the final investment supported.

- ◆ **Poland: loan and grant component for small and medium firms and loan plus guarantee for micros**

The partner, the Lubelskie Voivodeship designed a combined FI consisting of loan plus grant component in case of small and medium sized companies and a product composed of loan, grant plus guarantee component in case of micro firms.

The three proposed instruments are the followings:

**Instrument I:**

- ◆ Loan+Subsidy for small and medium companies in a volume of PLN 500,000 - 1.5 million
- ◆ The loan component creates 50% - 75% of the project value
- ◆ Maximum funding period: over 60 months

**Instrument II**

- ◆ Loan+Subsidy for micro companies in a volume of PLN 250,000
- ◆ The loan component creates 33% - 67% of the project value
- ◆ Maximum funding period: over 60 months

**Instrument III**

- ◆ Loan+Subsidy+Guarantee for micro companies in a volume of PLN 250,000
- ◆ The loan component creates 33% - 67% of the project value
- ◆ The guarantee covers from 50% to 100% of the loan
- ◆ Maximum funding period: over 60 months

According to the report, 65% of funds should be allocated to that part of the target group and the remaining 35% to the micro firms.

- ◆ **Croatia: grant plus loan element**

The Istrian partner proposed a combined FI consisting of a grant and a loan element. The FI targets Istrian SMEs and has the goal to finance projects related to energy efficiency and the use of RES. The total volume for FIRECE project is approximately HRK 148 million, the eligible cost of one single beneficiary would be between HRK 75.000 and HRK 3.750.000. In the proposed hybrid form of the FI, the grant element will have a share of at least 10.00% and at most 30.00%, depending on the size of the firm and the type of project. The loan amount will range between HRK 52.500 - HRK 3.375.000. After a grace period up to 24 months, repayments takes place on a monthly, quarterly or semi-annual rates. The loan will be repaid within 12 years. Interest rate equals 0,05% - 0,75% depending on the size of the beneficiary.

- ◆ **Saxony: matchlending composed of lending-based crowdfunding and public grant**

The Saxon partner proposes an innovative combination of public grant and a loan financed through a lending-based crowdfunding campaign. The construction is called matchlending, which targets Saxon SMEs and has an aim to contribute to the FIRECE goals. The construction is linked to the capital market, which is a desirable solution. Efficiency in the allocation of financial resources and acquisition of additional private funds for FIRECE objectives can be advantages of the proposed matchlending.

## 8.6 Expected Results of the Financial Instrument

According to the short overview on the FIRECE Project at homepage (<https://www.interreg-central.eu/Content.Node/FIRECE.html>), „the project aims to contribute to the implementation of the Regional Energy Plans and contribute to achieving the targets (in terms of Energy savings and RES) planned at EU and National Level.”

The expected results of FIRECE projects and the proposed indicators by the six partners can be structured into three groups. First, there are indicators which measure the efficiency of authorities in reaching and financing targets: Number of approached targets or in many reports number of beneficiaries and total amount of investment are not only mentioned in several reports but also target figures are set. The second group of indicators are measuring the success of FI at the beneficiary's level: financial figures of the supported firms, size of the project, number of employees at the beneficiary, value drivers related to energy efficiency (like number and surface area of facilities that have increased

energy efficiency, amount of electricity saved). Finally, there are indicators which measure at the regional or national level (depending on the partner) the energy related results, like decrease in primer energy consumption after energy-efficiency interventions measured in PJ/year, amount of energy gained from renewable energy sources measured in PJ/year. There are target figures set neither at the level of beneficiaries nor at regional/national level due to the heterogeneity of the beneficiaries' projects.

Thus, we can compare only the measures monitoring the efficiency of the program and managing authorities themselves. If we remember that the greatest impact in energy returns can be created when the number of subjects reached by the instrument is the highest, it is interesting to realize that most of the FIRECE projects are pilot projects. Where the exact number of beneficiaries is given: in Austria, there will be 410 beneficiaries; Hungary plans to audit 300 firms and to finance 250 of them; FIRECE FI is provided to 330 Polish SMEs. Table 15 contains a detailed comparison of scores for the evaluation criterion.

Table 15: Scoring of FIs according to the criterion "Scope of the assessed FI"

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
<b>6. Expected results of the financial instrument</b>	<b>15</b>	5	14	10	13	11	4
Number of approached agents of the target group (0 - no information, 1 - information on the total size of the target group, 2 - information on the approached targets)	2	0	2	0	0	1	1
Number of supported beneficiaries (0 - no information, 1 - given, 2 - estimated or explained)	2	2	2	0	2	2	0
Estimated results of projects: is there a significant increase in figures measuring RES utilization or energy efficiency? (0 - no or no information; 1-1 point for each figure, max.5 points)	5	0	5	5	5	5	0
Financial results of the project financed by FI (1-1 point for each development of financial figures, max.4 points): Does the project decrease energy expenses? Does the project increase competitiveness? Does the FI	4	3	3	3	4	3	3

shorten the payback period of the investment?							
Does the project create new sources of revenue for beneficiaries/increase revenue?							
Is an energy audit a compulsory element of the subsidy program? (0 – no; 2 – yes)	2	0	2	2	2	0	0

Source: own table

## 8.7 Involvement of Stakeholders

According to the D.T.2.3.1. Methodology for the PA1 addressed to Public Authorities the involvement of financial intermediaries and other stakeholders is important. They dispose of an overall picture of the market, the existing financial constructions, their advantages, disadvantages, and they also have information about the demand. The designed FIs address to SMEs; thus, direct involvement of SMEs will help to meet real needs and narrow market gaps. As FIRECE program aims to incite energy efficiency investments, contractors possess key information about the eligible investment possibilities. Experiences of other stakeholders also improve the construction of FI; their involvement can contribute to value creation as well.

As Table 16 proves, partners identified the main stakeholders successfully in their projects. First, in the design phase of the project, a high number of stakeholders are desired. But later in the implementation phase, a clear coordination among different participants from the supporter side (authorities, fund managers) is a key element in the success of the program. Their well-defined scope of activity helps to avoid failures of the subvention process.

With respect to this assumption, partners usually approached several future or potential stakeholders during the design phase. Interviews, workshops were conducted with the participation of authorities, market actors or other supply side agents; surveys helped to understand the needs of the target group.

Table 16: Scoring of FIs according to the criterion “Involvement of Stakeholders”

Evaluation areas and evaluation criteria	Max. score	Austria	Hungary	Italy	Poland	Croatia	Saxony
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<b>7. Involvement of stakeholders</b>	<b>15</b>	<b>15</b>	<b>13</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>14</b>
Does the report identify the most important stakeholders of the project? (0 - no, 1 - yes, 2 - stakeholders and their relation to the project is also defined)	2	2	2	2	2	2	2
Is the sphere of actions of MA and other authorities defined? (1 - partially, 2 - principles of cooperation as well, 3 - entirely)	3	3	3	3	3	3	2
Involvement of stakeholders in the development process of FI (1-1 for each of participants, max.5: Ministries, Managing authorities of relevant operative programs, Representatives of the target group (Chamber, SMEs), Financial Institutions, Academy (financial and enterprise faculties of economic universities/business schools), Others (venture capital agency, crowd funding platform, etc.))	5	5	3	2	4	5	5
Involvement of stakeholders in the proposed financial program (managing tasks, funding, regulatory tasks) (1-1 for each of participants, max.5: State, Ministries, Managing authorities, Experts, advisers (in energy efficiency, in SME financing, in managing tasks related to FI), Representatives of the target group (Chamber, SMEs), Financial Institutes, Foreign partners, Others (venture capital agency, crowd funding platform, etc.))	5	5	5	5	5	5	5

Source: own table

The level of workout regarding the governance structure or the clear definition of participants is not homogeneous among partners. The roles of the implementation are in



all cases well-defined, but it is not typical that roles are already assigned to a defined actor. For example, the Istrian partner provided the most sophisticated allocation of tasks and responsibilities: “The first level intermediate body is the Ministry of Economy, Entrepreneurship and Crafts. It defines the capacity of the financial instrument, develops a manual on rules and procedures, eligibility criteria for project proposals. The prepared documentation has to be in accordance with relevant laws, regulations...”

## 8.8 Transferability

As the FIRECE partners are regional actors of member states in the EU, it is important that they should design solutions which can be applied on the national and European level. The first question when considering transferability is the assessment of the applied methodology. An appropriate and well-implemented research is the cornerstone of the generalisability of results.

At least, qualitative results should highlight to partners which aspects they should consider when designing the FI. The more primary research took place in this phase, the relevant and the actual findings are. Desktop research is an overall success within the assessment proceeded by the partners. Appropriate sources and sufficient analysis helped partners in the design phase of the FI.

Primary research projects conducted by the partners are less documented (See Table 17). Nearly all the partners reported at least one kind of primary research, but neither the focus nor the size of the example (in the case of quantitative research) was covered in the description.

The following qualitative researches took place to underpin the constructions of FIs: The Polish FI is based on a number of interviews, the research also covered, among others representatives of the MA ROP WL 2014-2020 Lubelskie Voivodeship, representatives of the Department of the Environment and Natural Resources of the Marshal Office of the Lubelskie Voivodeship in Lublin, representatives of the Department of Strategy and Development of the Marshal Office of the Lubelskie Voivodeship in Lublin, representatives of the Lublin Enterprise Support Agency, representatives of the Regional Fund for Environmental Protection and Water Management in Lublin, final recipients of support, employees scientific and financial intermediaries. The Austrian partner tested the already running construction of the FI and reports that in the expert interviews, lean decision-making processes, in particular, were highlighted as a factor in successful implementation for the fund. In the case of Hungary, for gathering first-hand experiences, experts from the relevant department of the Ministry of Finance were interviewed. In addition to the interviews, two workshops were organised, one for stakeholders from the beneficiary side, and one for stakeholders from the supporter side. Istrian FI is based on direct interviews with representatives of three commercial banks and Croatian Bank for Reconstruction and Development.

In most academic research, scientists have more confidence in quantitative methods which are usually designed based on preliminary qualitative findings. Primary quantitative research provides the mathematical and statistical background of the generalisation. There are several examples of quantitative research projects, as well. The Italian partner conducted a survey to analyse the general characteristics and needs at the sector level

and to explore the supply and the demand for financial instruments at the level of a specific industry sector. The Polish partner reported a research carried out on a representative population of enterprises from the SME sector from the Lublin province. In Istria, a survey of Istrian entrepreneurs was conducted on a sample of 23 entrepreneurs. The response rate was below the satisfactory level. The survey was conducted for 35 days, and more than 180 entrepreneurs were contacted directly and indirectly. Hungarian report builds on quantitative methods as well: Hungarian SMEs were labelled as climate-friendly technology providers and general SMEs. A further market investigation was carried out in both categories using quantitative methods and case studies. The Saxon partner prepared a detailed market analysis of energy related crowdfunding projects in Germany.

Foreign good practices are only partially part of assessment. In many cases, just a construction or the name of the program/product is mentioned. A good solution is provided by the Italian partner who dedicated the 7.1.3 part of the Italian report to the Slovak Energy Efficiency and Renewable Energy Finance Facility (SlovSEFF).

If the applied methodology theoretically allows generalisation of results, a second question is whether the construction is appropriate to other regions or other member states in the EU. The present assessment found that all the constructions can be transferred to other member states, but the proposed FIs cannot be treated as general and standardised solutions. There are several countries where SMEs are not ready to absorb FIs without grant elements (see for example Hungary, Croatia, Poland). At the same time, the Upper Austrian SME segment contains firms as well whose financial needs can be satisfied by equity products. A well-designed FI gives an adequate answer to market failures and special needs of the target group. Before transferring good practices to other countries, the related circumstances should be explored, and partners should consider whether similar problems are to be solved in their country to those of the designer partner's country.

Table 17: Scoring of FIs according to the criterion "Transferability"

<b>Evaluation areas and evaluation criteria</b>	<b>Max. score</b>	<b>Austria</b>	<b>Hungary</b>	<b>Italy</b>	<b>Poland</b>	<b>Croatia</b>	<b>Saxony</b>
<b>8. Transferability</b>	<b>15</b>	<b>12</b>	<b>14</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>13</b>
Are the results of the study based on qualitative research? (0-6: 1 – only desktop research without references, 2 – desktop research with less than 5 external references, 3 – desktop research with more than 5 external references, +1 – interviews with experts, +1 –	6	4	6	3	6	6	4

workshops, +1- any other kind of qualitative research)							
Are the findings of the study based on quantitative research? (1 - only tables, figures charts, 2 - quantitative methodology with a sample size smaller than 50, 3 - quantitative methodology with a representative sample or with a sample size larger than 100)	3	2	2	2	3	3	3
Is there a comparison between foreign best practices and the proposed FI? (0 - no; 1- partially; 2 - detailed)	2	2	2	2	1	1	2
Will the construction provide a knowledge base transferable to other regions? (0 - no; 1 - partially, 2 - entirely)	2	2	2	2	2	2	2
Will the construction provide a knowledge base transferable to other member states? (0 - no; 1 - partially, 2 - entirely)	2	2	2	2	2	2	2

Source: own table