



Risk reduction for Building Energy Efficiency investments

EEnvest innovative business model

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n. 833112

Executive Summary

This deliverable D7.2 *Innovative Business Model* focuses on how the EEnvest Business Model (BM) has been built, matured and what its prospects are for future developments.

This final version, written at M36, compiles the work done since the beginning of the project and updates and completes the information written in the interim version of this report at M18.

This report begins by explaining the *convergent and divergent* methodology that was used to construct the EEnvest BM. This divergent-convergent process is like a funnel that slowly closes, using a succession of divergent tools of questioning, investigation, analysis, and convergent activities of making choices and creating an image of the future product. Tools used include benchmarking, brainstorming, mind maps, Ads libs...

Follows a paragraph precisising the EEnvest platform and four component tools that have been developed during the project. An analysis of the market was carried out by looking at relevant key facts and figures: the Energy Efficiency Envestment (EEI) sectors are evolving rapidly, and a host of new requirements and tools are emerging. The benchmark showed that EEnvest tools are the tools that integrate the most data for their risk analysis: financial data, technical data but also multi-benefit analysis with social and environmental data. In addition, EEnvest tools are based on data unlike other financial advisory services, which allows for objective and comparable analysis over time.

Based on this knowledge of the market, a segmentation has been set up to meet the specific needs of the marketing of EEnvest tools. This segmentation is composed of four segments: Investors, Owners & Non-investors, Owners & Investors and Intermediaries. For all segments the value proposition of EEnvest tools is perceived at two key moments of the investment process:

- Design of the EE project: EEnvest allows to analyze the project, quantify the risks and adjust the project technical program to make it as low risk as possible.
- Finding investors: EEnvest provides reporting features needed to produce KPIs on the investment and convince investors

The report then presents the commercial perspectives of the platform on the one hand and the four component tools on the other. This information is summarised in the form of business model outlines and business cases, that were developed throughout the project involving all the project partners, but also thanks to interviews conducted with demo case owners, advisory board members and prospective customers. We found that it was easier to market each component tool individually than to bring them together in the platform.

Finally, developed business models are equipped with SWOT analysis and recommendations for the implementation.

The current context is favorable to a more sustainable finance and more investment in building retrofits, but the green finance sector is still under construction. In contrast to pure greenwashing communication of some private companies, EEnvest offers comprehensive and sophisticated data-driven de-risking tools and KPIs that increase the confidence in adding the EE investment to a portfolio bringing reliable cash-flow forecast and proven sustainability.

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Deliverable type:	Report
Dissemination level:	Public
Deliverable number	Deliverable D7.2
Actual delivery date:	23 rd August 2022
Version:	Final version
Project title	Risk reduction for Building Energy Efficiency investments
Project acronym	EEnvest
Project website	http://www.eenvest.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n. 833112.

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Version Log			
Issue Date	Rev. No.	Author	Change
14/12/2020	1	R2M Solution France	First draft
07/01/2021	1.1	GNE Finance Reviewer	Review of the first draft
22/01/2021	2	R2M Solution France	Second draft
13/06/2021	3	R2M Solution France	Third draft
20/06/2021	3.1	GNE Finance Reviewer	Review of the third draft
13/06/2022	4	R2M Solution France	Creation of the final version

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1. INTRODUCTION

1.1 AIM AND OBJECTIVE

This deliverable presents the work carried out in the framework of the development of the EEnvest platform business model. This work has been carried out throughout the project and the classic tools for the development of business models have been used. The reflections were fed by numerous discussions and exchanges with actors of the investment sector.

Report structure

Chapter 2 presents the methodology and tools used to develop the business model. Before presenting the result of this work we considered it relevant to recall what the concepts and main results of the EEnvest project are in chapter 3.

A key point in defining the business model is to have a good understanding of the market. Chapter 4 presents the market context with key facts and figures of the energy renovation sector with a focus on energy efficiency investment models (EEI). An analysis of services and tools such as those proposed by the results of the EEnvest project is summarised in this chapter.

Numerous discussions and workshops with project partners and exchanges with Energy Efficiency Investments (EEI) players have made it possible to develop the value proposition of the EEnvest tools and the segmentation analysis of the corresponding target customers which are presented in Chapter 5.

Finally, chapters 6 and 7 present the results of all these reflections for the definition of a Business model of the global EEnvest platform on the one hand and of the tools taken individually on the other hand. These chapters also develop financial models as well as different business cases to help and guide the future development of EEnvest tools and methods.

To assess these elements and suggest paths for future development, we provide recommendations and a SWOT analysis of the proposed business model in Chapter 8.

1.2 CONTRIBUTION OF PARTNERS

R2M is the main author of this report. All partners have contributed to the report, as they (1) validated the segmentation and value proposition and (2) actively participated in drafting possible business models.

2. Methodology

2.1 OVERALL APPROACH FOR BUSINESS MODEL DEVELOPMENT

Business model development activities have been carried out throughout the life of the project. The overall strategy that shaped these activities is detailed here and can be broadly divided into three phases:

1. Development of the first version of the platform business models and preliminary validation. It provides the first version of the EEnvest business model as a result of the process detailed in section 3.2 below and following a top-down approach, i.e. starting from market analysis and value proposition identification rather than from specific business cases or applications; the final outcome consists in the business models detailed in chapter 5, addressing generalised needs for each identified customer segments. Pre-validation of these business models is obtained through initial feedback from interviews to key actors. One of the main conclusions of this feedback is that we can benefit from marketing the components individually in addition to the complete platform.
2. Implementation of business models for each tools / component of the platform validation through cost-benefit analysis. In this second step, the developed business models are applied to real cases from different countries (i.e. the EEnvest demonstration projects) and characterised based on real customer needs and requirements.
3. Refinement of business models for full applicability. Finally, results of the cost-benefit analysis, together with feedback from customers allow us to move from the validated pilot-focused business models back to general ones, ensuring a reliable and consistent homogenisation of results. All this work results in the final version of the business models, fully detailed in all areas of the business model canvas, refined using a bottom-up approach and widely applicable to a highly segmented market.

The chosen strategy combines top-down and bottom-up approaches to ensure coverage of all EEnvest market aspects and gives importance to real customer needs.

2.2 CONVERGENT AND DIVERGENT APPROACH

iteration of divergent and convergent activities (Alexander, 1964, Figure 1). The divergent activity is questioning a number of inquiry boundaries, a number of major design options, and sets of core values and core ideas. Convergent activity is the process of making choices and creating an image of the future product. This divergent – convergent process may be depicted¹ as slowly closing funnel, linear over time (Cross, 2000) (Ulrich & Eppinger, 2008), or as

¹ Dancing with Ambiguity: Causality Behavior, Design Thinking, and Triple-Loop-Learning, 2011 - L. John Leifer and M. Steinert

repeating design cycles, spiral like, that iterate through the generic prototyping phases of design, build and test (Thomke, Fujimoto, & Research, 2000).

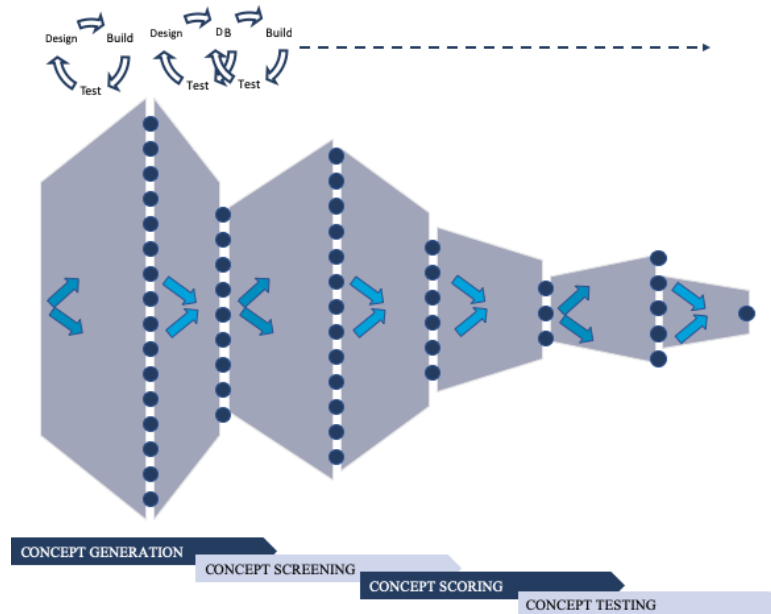


Figure 1 - The divergent and convergent phases of innovative product development

2.3 SPECIFIC TOOLS USED DURING THE PROCESS

2.3.1 BENCHMARKING - OFFER ANALYSIS

Divergent tool

Benchmarking is the practice of comparing business key elements and best practices from other companies in the same activity sector. It is a divergent tool, allowing to explore and discover elements upon the offer in the sector.

The benchmarking analysis has been carried out during the first phase of the project. The chapter 4 presents a descriptive qualitative analysis of the most relevant tools and services that evaluate/support the decision making of EEI describing their strengths and weaknesses. The information was gathered from interviews with key stakeholders, project descriptions and existing compilations and reports. The selection of supporting tools and services considered in the analysis was based on the following key criteria:

- Currently active in the relevant geographical area
- Interesting business model
- Supporting the decision making of EEI
- Works in collaboration with other organisations and actors in the value chain
- Innovative approach or experiences with a significant visibility
- Active in Europe

The analysis was conducted by benchmarking the existing tools and services based on several performance parameters (e.g. business model, KPIs, market penetration etc.).

The benchmarking process involved five steps as shown in Figure 2: five steps of the benchmarking process. In the first step, the comparable aspects are identified between the integrated renovation services. In the second step, performance metrics responsible for creating

performance gaps are identified. The third step integrates the result of the benchmarking exercise. In the fourth step the performance metrics are standardised, and specific action areas identified. Finally, in the fifth step all the important aspects are included based on which recommendations are derived.



Figure 2: five steps of the benchmarking process

Future EEI support tools & services need to adapt to the benchmarks to achieve the desired performance. The learnings from the benchmarking process have been applied in exploiting further the EEnvest outcomes.

2.3.2 BUSINESS CANVAS METHODOLOGY

Convergent tool

A methodology traditionally used is that of the Business Model Canvas (BMC) which describes a business model as “the rationale of how an organization creates, delivers and captures value.” A well-known image from the business model generation community that describes this approach is shown in Figure 3.²

² Business Model Generation, A. Osterwalder, Yves Pigneur, Alan Smith, and 470 practitioners from 45 countries, self published, 2010. Available at <https://www.strategyzer.com/books/business-model-generation>.

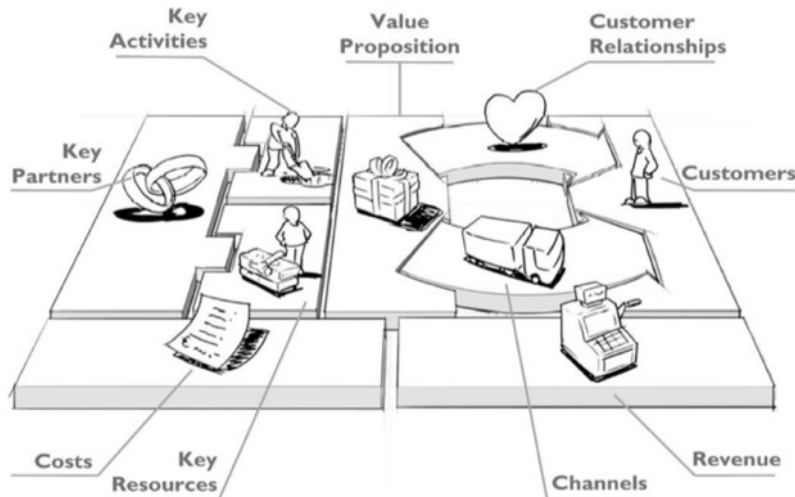


Figure 3 - Business Model Canvas

The starting point for canvas development and working on defining the business model is a clear definition of what is being offered, to whom, and for what purpose. This topic is referenced by the business model generation community as the so-called Value Proposition Design.

The Value Proposition Design Canvas is depicted in Figure 4 where the value proposition (product or service) is on the left and customer segment is on the right. It focuses on the “fit” between what is offered and what customers actually need. The information it contains has fed the Value Proposition and Customer building block of the Business Model Canvas.

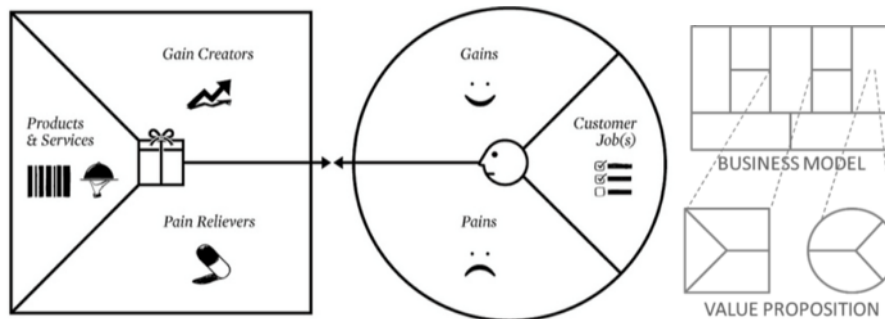


Figure 4 - Value Proposition Canvas, value proposition (square) and customer segment (circle)

The Ad libs tool template (Figure 5) is used to help filling up the Value Proposition Canvas. Discussing around the Ad libs template helps a project team to quickly and easily initiate reflection around the business model. It is a great tool to quickly test alternative value propositions. It forces the team to pinpoint how exactly value can be created³.

³ <https://assets.strategyzer.com/assets/resources/ad-lib-value-proposition-template.pdf>



Figure 5 - Ad libs tool template

2.3.3 MARKETING-MIX 4Ps OF MARKETING

Convergent tool

The marketing mix helps to define the positioning of an offer on the market.

One of the most known models is the 4Ps of Marketing, which helps define marketing options in terms of Product, Place, Price, and Promotion:

- **Product:** what features does the product have to meet the customer needs?
- **Place:** where do buyers look for your services?
- **Price:** what is the value of the product or service to the buyer? Are there established price points for products or services in this area? Is the customer price sensitive? Will a small price drop gain additional market share? Or will a small increase go unnoticed? How will your price compare with your competitors?
- **Promotion:** Where and when can you get your marketing messages across to your target market?

2.4 PHASE OF THE BUSINESS MODEL DEVELOPMENT PROCESS

The following work has been made:

First phase (M0-M10):

To develop the EEnvest platform concept and business model, we have first been through a divergence phase resulting in a mind map of the project. This work has allowed us to define the first business model canvas of the project (convergence activity). Then we have explored the different cost structure possibilities for a web-based platform (divergence activity). We ended up the first six months of the project by defining the platform's customers, assessing their wishes and their needs.

Second phase (M11-M17)

To further develop the EEnvest platform's innovative business model, we first carried out some desk research to find the key market figures and a benchmark analysis. A workshop led during the 3rd project meeting (May 2020) has validated a first version of the client segmentation and value proposition. Then, a first draft of the business model has been prepared by R2M Solution,

and the preliminary targeted metrics (traffic potential, conversion rates, acceptable unit price) have been discussed during the 4th project meeting (December 2020).

Third phase (M18-M23)

Two consortium brainstorming sessions were organized to collect project partners' feedback regarding project progress and key decisions were made impacting the BM. In the first session (February 2021), the Pros & Cons and a monetization analysis of the Project Desktop Self-Assessment Tool (PQSAT). The PQSAT appeared to be a powerful tool to mitigate the risk of low-quality data input to the platform (garbage in/garbage out) and its integration as a functionality of the platform became a priority. A 2nd brainstorming session (April 2021) focused on the platform functionalities monetization analysis.

Fourth phase (M24-M36)

During the 2nd exploitation workshop held in July 2021, considering delays in the development of methodology and implementation of the platform, a new exploitation strategy focusing on EEnvest tools was decided and validated by all project partners. The efforts focused on contacting and exchanging with potential pioneer users of the platform and/or its tools. The exchanges aim at understanding where the EEnvest tools could land in the current workflow. It allowed us to define two priority segments of high-potential customers, which are the project promoters and the investors.

Furthermore, we investigated concrete potential business cases interviewing specific investors with different profiles and needs (e.g retail bankers, investment funds, ESCOs).

The business model, segmentation and business cases allowed us to determine the commercialisation strategy and future development for the EEnvest tools and platform.

3. EEnvest project main results

The previous chapter 2.4 introduced the EEnvest platform and EEnvest technological tools as EEnvest project main results, output, products. Before presenting the work done on the business model, it is important to briefly recall what these elements are.

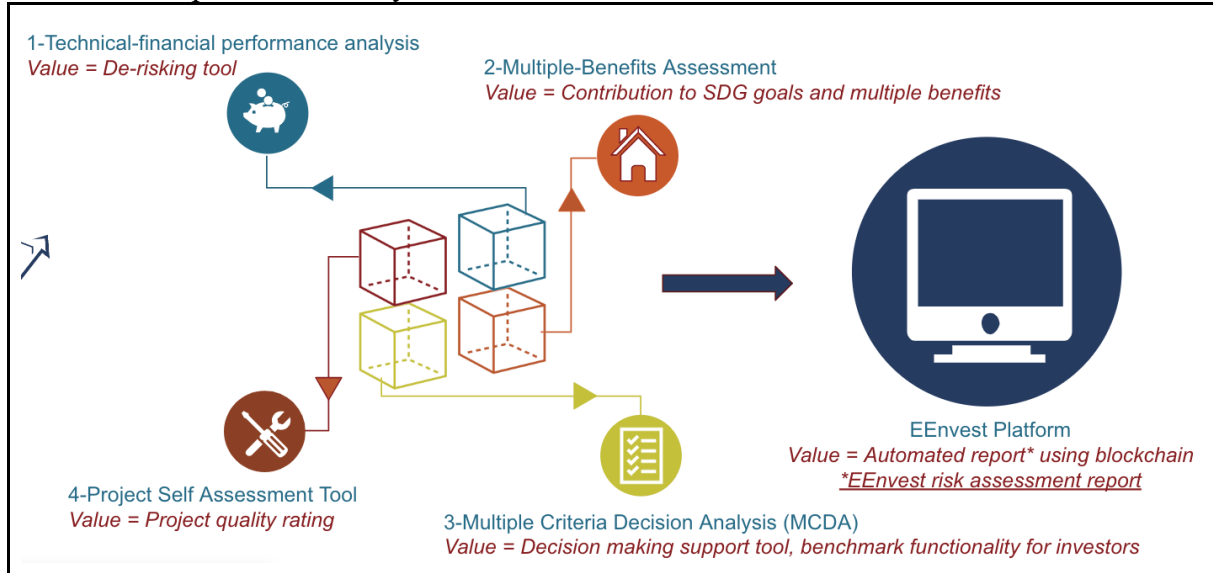


Figure 7 – EEnvest tools and platform

3.1 EENVEST CONCISE PROJECT DESCRIPTION

In strategic development, the highest level of abstraction to define a project is the description of the Mission – Strategy – Vision. In collaborative projects, like this, it is very important to

define these three aspects, to be sure that all partners are aligned and are working towards the same goal.

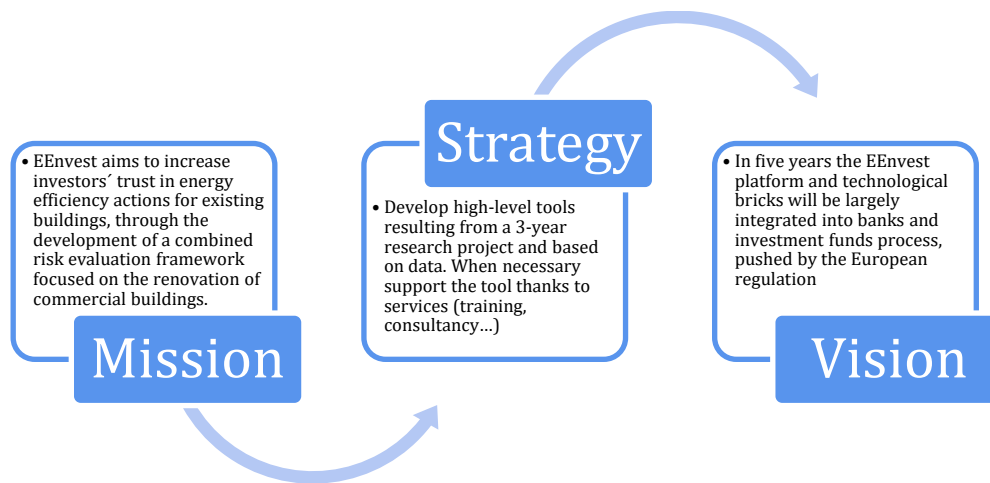


Figure 7 – EEnvest concise project description

3.2 EENVEST TOOLS

During the project, the EEnvest partners have developed a portfolio of methodologies and models constituting the base of the EEnvest platform functionalities.
The consortium has selected 4 main elements which can also be implemented standalone:

- **Tool 1: Technical-financial performance analysis de-risking model**

- Output: provide KPIs quantifying the impact of the expected technical and financial performances.
- Values: data driven de-risking model, standardization of the EEI evaluations
- Usage: use Excel spreadsheet for consulting service support and Python scripts integrated into the EEnvest platform

- **Tool 2: Multi-benefits Assessment methodology**

- Output: Multi-benefit performance KPIs
- Value: quantifying certain environmental and social benefits, unveiling alignment with SDGs and EU Taxonomy compliance
- Usage: compilation of quantitative and qualitative methods to obtain Multi-benefit KPIs estimations.

- **Tool 3: Multiple criteria decision analysis methodology**

- Output: Tailored report aligned with the organization priorities
- Value: standardization of the EEI evaluations for portfolio composition and management
- Usage: methodology advising KPIs weighting factors based on organisation's management priorities.

- **Tool 4: Project Quality Self-Assessment Tool (PQSAT)**

- Output: Project Quality score (likelihood for an EE project to meet its goals once financed)
- à Value: project quality rating, increase trust in data input quality

→ Usage: 1-hour questionnaire answering yes & no to evaluate the practices implemented throughout the whole EE project design, identify room for improvements and get quality label.

For more details on these tools please refer to the other project deliverables.

3.3 EENVEST PLATFORM

The EEnvest platform offer a way to access and to use the EEnvest methodologies and models developed by the consortium. The EEnvest platform produces a report of KPIs characterizing each EEI project, unveiling the full impact of each EEI. The EEnvest risk assessment report should increase investors' confidence in EEI and lead to mainstreaming private investments in building energy efficiency projects. The EEnvest platform implements a standardised evaluation framework of EEI projects technical and financial risks, along with non-energy benefits, making the EEI comparable by investors on an objective basis.

The EEnvest risk analysis is data driven, based on comprehensive and objective data input by building owner/project promoter and extracted from EEnvest risk database. The quality of the data input can be assessed and scored for each project via the Project Quality Self-Assessment Tool developed.

Thus, the platform enabled an informed decision-making process for investor's go/no go to the EEI, no longer based on investor's experience and knowledge, and penalized by subjective perception of complexity and uncertainty on results from EEI investments.

4. Market context

The market context is recalled with key facts and figures of the energy renovation sector with a focus on energy efficiency investment (EEI) models. An analysis of services and tools such as those proposed by the EEnvest project results is also summarised in this chapter.

4.1 KEY BUILDING RENOVATION FACTS & FIGURES

4.1.1 HETEROGENEOUS BUILDING STOCK ACROSS EUROPE

According to the EU buildings Factsheet⁴, the EU building stock is quite heterogeneous. Across all Member States, most of the floor area is composed by **residential buildings**. The share varies considerably, from around 60% in Slovakia, Netherlands, and Austria to more than 85% in the southern countries of Cyprus, Malta and Italy.

As represented on Figures 8 and 9, the distribution of non-residential floor areas by branch is not homogeneous and depends on the economic structure of each sector. On average, three quarters of the service floor area is covered by offices (including both private and public; 30%), wholesale (27%) and education (16%).

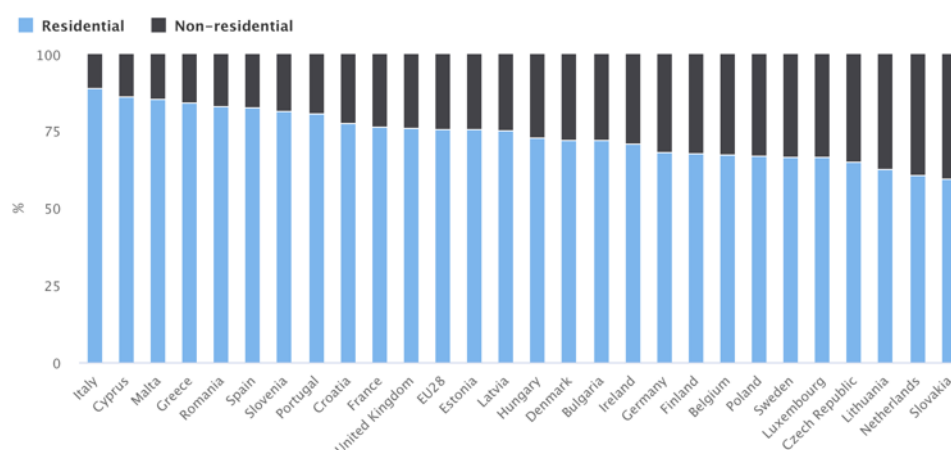


Figure 8 - Distribution of building stocks in Europe by typology (residential / non-residential)

⁴ https://ec.europa.eu/energy/eu-buildings-factsheets_en

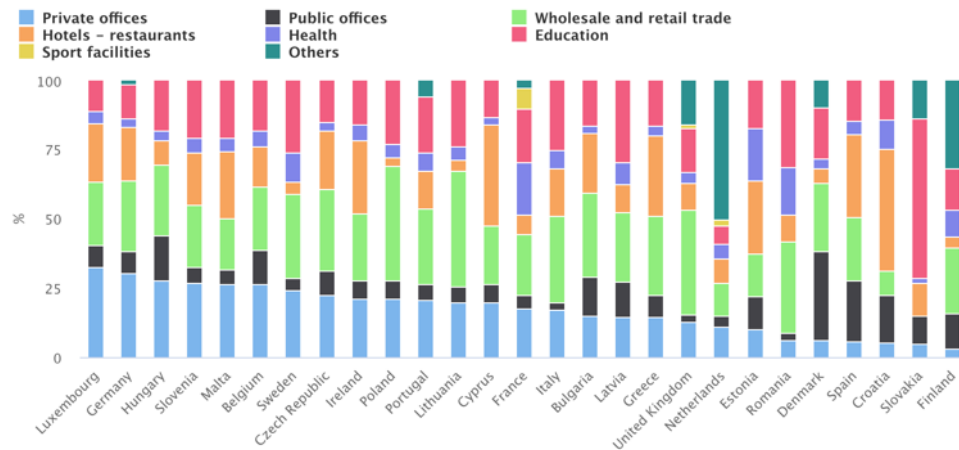


Figure 9 - Distribution of non-residential floor area by area of use (2013)

4.1.2 EUROPEAN RENOVATION STRATEGY

In many EU renovation strategy articles⁵ appear the same numbers: 75% of buildings of the EU block were built with no or minimal energy-related building codes and more than 95% of the building stock must be upgraded to achieve the 2050 goal of CO₂ emission.

In 2018, in its Knowledge hub⁶, BPIE made public that the renovation rate in EU lingers at 1%, out of which the share of deep energy renovations represents around 5%. Standard renovation will often achieve energy savings ranging between 20% and 30% and sometimes less. Only deep renovation can achieve building's energy use reduction of more than 50% and up to 75%. BPIE's publications claim that the renovation rate must increase to reach 3% in a very short period of time and deep renovations should become the norm if we want to reach the EU climate preservation goals (Figure 10).

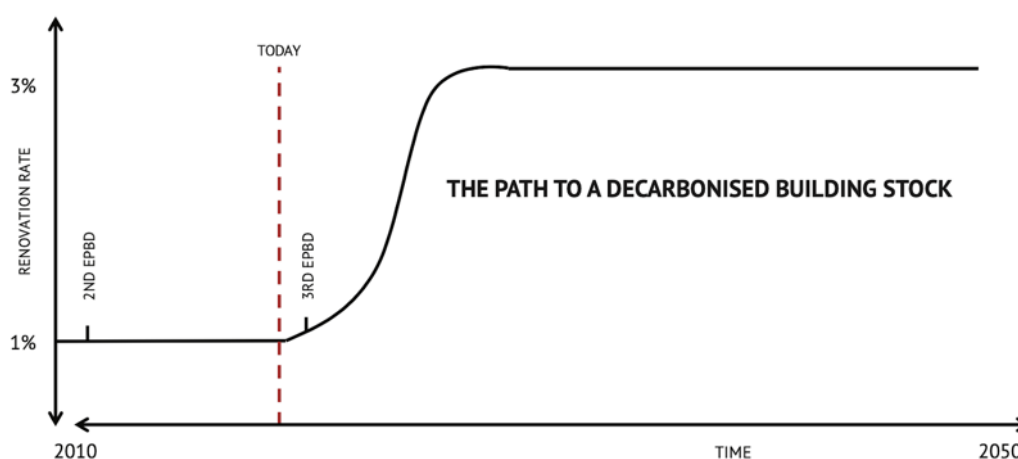


Figure 10 – Renovation Rate as see in 2018 (BPIE publication)

⁵ Renovation wave: <https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave>

⁶ <https://www.bpie.eu/knowledge-hub/#ongoing-projects>

The establishment of national renovation strategies were encouraged by the European Commission through program like EmBuild⁷ but the audit of the resulting policies highlighted weak points (Figure 11) that will need to be strengthened by the development of additional innovative services or products.

MEMBER STATES	OVERVIEW OF NATIONAL BUILDING STOCK	COST-EFFECTIVE APPROACHES TO RENOVATION	POLICIES AND MEASURES TO STIMULATE RENOVATION	FORWARD-LOOKING PERSPECTIVE TO GUIDE INVESTMENT DECISIONS	ENERGY SAVINGS AND WIDER BENEFITS	DOES THE STRATEGY MEET THE MINIMUM REQUIREMENTS OF ART.4 EED?
CROATIA	●	●	●	●	●	●
CZECH REPUBLIC	●	●	●	●	●	●
FRANCE	●	●	●	●	●	●
ITALY	●	●	●	●	●	●
SPAIN	●	●	●	●	●	●

Figure 11 - Compliance of national renovations strategy requirements (from BPiE's webpage).

In October 2020, the Commission published a new strategy⁵ to boost renovation called "A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives" (COM(2020)662)⁸. It aims to double annual energy renovation rates in the next ten years. These renovations should enhance the quality of life of people living and using the buildings, reduce Europe's greenhouse gas emissions, and create up to 160,000 additional green jobs in the construction sector. This pushy strategy confirms the determination of the Commission to develop renovation projects and related markets as the one related to Energy Efficiency Investments (EEI).

In 2022, the European Commission has developed the REPowerEU Plan. This plan answers to the double urgency to transform Europe's energy system: ending the EU's dependence on Russian fossil fuels and tackling the climate crisis.

4.1.3 ENERGY EFFICIENCY FINANCING IN EUROPE

In practice, renovating large portions of the European Union's building stock is a massive challenge and funding will need to come largely from the private sector. To motivate private investors, they would need to see clear benefits in Energy Efficiency Investments (EEI).

The Energy Efficiency Financial Institutions Group (EEFIG) was established in 2013 by the European Commission Directorate-General for Energy (DG Energy) and United Nations

⁷ <https://embuild.eu>

⁸ <https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave>

Environment Program Finance Initiative (UNEP FI). In February 2015 EEFIG presented its landmark report "Energy Efficiency – the first fuel for the EU Economy: How to drive new finance for energy efficiency investments" which provided a significant advance in the understanding and knowledge about the issues of energy efficiency financing. About 90% of the renovation financing needs to come from the private sector. Debottlenecking the decision process of EEI is key. It makes quite clear that de-risking the Energy Efficiency Investment is a crucial issue in Europe.

The EEnvest project proposes to support investors' decision-making process by translating building's energy efficiency technical requirements into economic indicators. These indicators are in turn used to evaluate financial risks associated with deep renovation investment and to include non-energy benefits in asset evaluation models.

4.1.4 ESG AND EU TAXONOMY

ESG

Environmental, Social and Corporate Governance (ESG) is an approach to assessing how well a company is working towards social goals that go beyond a company's role to maximize profits. Various governmental organisations and financial institutions have developed ways to measure the degree of alignment of a specific company with ESG objectives, but there is **no single ESG assessment method approved by European authorities**.

ESG risks vary by industry and geographic factors and companies. Among investors, banks and investment funds use risk rating data in different ways -- a) to enhance reputation by marketing programs messaging and/or involvement in sustainability initiatives; b) banks use the data to determine the financial risk of making loans to companies; and c) investors use the data to identify investment risk or opportunity as it relates to the company's overall risk profile and strategy about impact reporting.

EEnvest tools are covering the Environmental and Social aspects of the ESG ratings, but not the Corporate governance aspects.

Regulatory system & EU taxonomy

Regulatory to address sustainable finance there are multiple frameworks and different timelines: Sustainable Finance Disclosure Regulation (SFDR), Non-Financial Reporting Directive (NFRD) and one of the latest initiatives the EU Taxonomy (come into force in 2020, still under deployment. From 2024, banks will also have to disclose energy efficiency indicators on their mortgage portfolios).

The EU Taxonomy is a strategy to create a harmonized understanding of what actually constitutes sustainable activities across the European Union. It attempts to define 'green activities' for the first time, using minimum criteria that economic activities should comply with in order to be considered to be environmentally sustainable. The taxonomy states that only activities which substantially contribute to one or more of six environmental objectives should be defined as being green. These are climate change mitigation; climate change adaptation; protecting marine and water resources; transitioning to a circular economy; preventing pollution; and protecting or restoring biodiversity and ecosystems.

Reporting on these activities is mandatory for most investors (i.e., to meet the EU Taxonomy, asset managers have to disclose the percentage of their funds' assets under management that sit within taxonomy-aligned activities). Calculating this requires a deep level of granularity into what proportion of a company's activities are aligned.

This system could certainly increase the environmental requirements that weigh on companies and thus accelerate the ecological transition. But criticisms have already been made: the EU taxonomy is seen as a procedural system, certain key points of sustainable development are not clarified yet, such as biodiversity, and other activities are considered green but are not unanimous like nuclear and gas.

4.2 CHARACTERISATION OF THE EEI

In terms of EEI business models and financing instruments, there is a mix between policy instruments such as subsidies and tax incentives and other financial tools developed by the industry such as interest rate reductions on mortgages (energy-efficient mortgages), energy efficiency as a service (among others), EPC... Below a short presentation of the main tools.

4.2.1 EEI BUSINESS MODELS

The present Deliverable 4.2 *Energy Efficiency Business Models* introduces business model concepts such as stakeholders, service delivery model and financing and presents the two main business models that are commonly used for the delivery of EE services: the **Separate Contracting Based (SCB) business model** and the **Energy Performance Contracting (EPC) business model**, including its main variants. The EPC business model is a very modular model that comes in various shapes and forms, depending on 1.) how the performance risks are allocated, 2.) at what level savings are determined and guaranteed or 3.) what the scope of the services is.

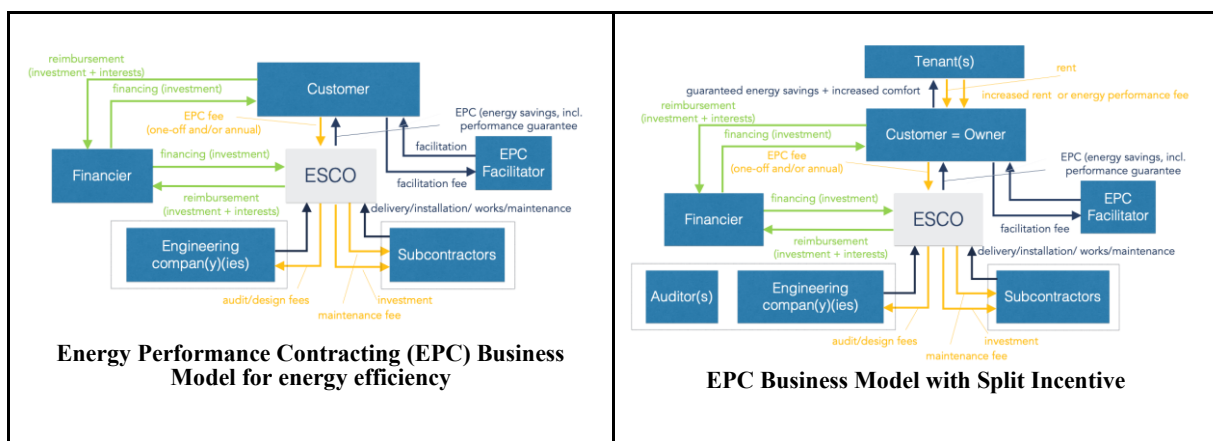


Figure 12 – 2 EPC schemes explained (source = ENERGINVEST)

4.2.2 EEI FINANCING INSTRUMENT

Financing instruments are often referred to as high-level structures that respond to market failures and specific country-level needs. In the case of innovative financial instruments, a change in local legislation may be required (for example On-Tax Financing). As such, financing instruments are highly dependent on the existing legal framework and in some cases, to accounting legislation at country level.

The deliverable D4.2 also presents the available financing instruments for commercial building renovation. In this quest, the desk research task force leverages on a 2015 EEFIG Study⁹ plus partners expertise on the matter to select a specific set of financial instruments for further analysis.

Figures 12 and 13 below pinpoints the most relevant financial instrument for our work.

Mature Financial Instruments	Commercial	Public	Public Rental	Private Rental	Owner Occupied
Dedicated Credit Lines	3	2	3	3	3
Energy Performance Contracting (Undertaken by Private Sector)	3	3	3	1	1
Risk-Sharing Facilities	2	1	2	2	2
Direct and Equity Investments in Real Estate and Infrastructure Funds	2	1	1	2	0
Subordinated Loan	1	1	1	1	1
Covered Bonds	1	1	1	0	0
Leasing	0	1	0	0	0

Figure 12. Source: EEFIG 2015

Emerging Financial Instruments	Commercial	Public	Public Rental	Private Rental	Owner Occupied
On-Bill Repayment	2	1	2	3	3
On-Tax Finance (PACE)	2	1	1	2	3
Energy Efficiency Investment Funds	3	2	2	1	1
Energy Services Agreement	3	3	2	1	1
Public ESCOS for Deep Renovation of Housing	0	0	3	2	2
Factoring Fund for Energy Performance Contracts	2	2	1	1	0
Public ESCOS for Deep Renovation of Public Buildings	0	3	3	0	0
Green Bonds	2	1	0	0	0
Citizens Financing	0	0	0	1	2

Figure 13. Source: EEFIG 2015

The figures above share a common purpose which is to rank the 16 identified (in 2015) financial instruments suitable for energy efficiency investments. Under this frame, an exhaustive survey was conducted by the EEFIG to better determine the applicability to support the investment flows towards EE retrofits endeavors. The following scores were set by the EEFIG:

- Score 0 if instrument is "not applicable" (Mature) or has "zero potential" (Emerging)
- Score 1 if instrument is "marginally useful" (Mature) or has "some potential" (Emerging)
- Score 2 if instrument is "useful" (Mature) or has "potential" (Emerging)

In Task 4.3 and the related deliverable D4.2, project partners have defined a methodology to identify the best financing solution for the investment project, according to a series of variables, namely:

- **Risk-aversion:** Reluctancy to bear with the risk of performance of the renovation project (i.e., energy savings). A building owner with low risk-aversion is prone to deal with more risk than a building owner with high risk-aversion. Provided that risk-aversion is a subjective variable, only depending on personal perception, for the purpose of this exercise, risk-aversion is addressed on an objective base through the technical risk KPIs ("performance gap" and "damage").

⁹ For further reference, see:

<https://ec.europa.eu/energy/sites/ener/files/documents/Final%20Report%20EEFIG%20v%209.1%2024022015%20clean%20FINAL%20sent.pdf>

-
- **Financial leverage:** Willingness to cover a portion or the full investment cost with third-party financing.
 - **Project size:** It refers specifically to the total investment value of the renovation project.

4.2.3 CAPITAL GAP & LATEST TRENDS

Despite the co-existence of all these instruments presented in 4.2.1 and 4.2.2, the capital gap¹⁰ still remains a challenge.

Blended finance

A new trend has taken hold in the real estate development community: blended finance. The Economist calls it a "cocktail of public, private and charitable money". This cocktail is not an asset class but rather a structuring approach, mixing different pools of capital with varying return expectations. For example, while public capital may or may not have an expectation of commercial returns, private capital expects commercial returns, and charitable capital may seek capital preservation or be willing to bear losses. In a nutshell, blended finance uses capital from public (government grants – taxpayers' money) or philanthropic sources to de-risk transactions, helping to leverage private capital into investments aimed at achieving targeted impacts.

But the current level of capital deployment leverage thanks to blended finance is well below the required level to deliver on climate commitments.

Carbon credits

In his article "The hack for sustainable buildings"¹¹, Pietro Visetti from Green Digital Finance Alliance discusses the possibility of carbon credits to bridge the capital gap. A carbon contract is a contract between two parties under which one party voluntarily agrees to reduce emissions (or increase carbon sequestration) in exchange for payment from the other party".

In the case of "deep renovations", offset projects would work, for example, by reducing the consumption of electricity and natural gas in residential and/or commercial buildings, which lead to a reduction in carbon (CO₂eq) emission from power generation.

By further questioning this possibility of carbon offsets to finance the renovation of buildings, there could be innovative scenarios. For example, a bank could buy some of the credits they need to achieve their goals from owners who are willing to take out a loan from their institution to renovate their homes. In the same spirit, insurances could buy the carbon credits resulting from the deep renovation of the building and sponsor part of the renovation. These prospective scenarios are not yet common practices but becoming an option for whom is looking for funds to be invested in EE.

4.3 BENCHMARK OF EEI PRODUCTS AND SERVICES

With the idea to better understand what services and products related to EEI are already available on the market, a benchmark has been conducted. It aims at understanding customer

¹⁰ Energy efficiency investments face unique hurdles, such as high up-front costs, long pay-back periods, and small-scale individual investments, all of which contribute to the investment gap needed to reach the climate goals set in the Paris Agreement.

¹¹ <https://pietrovisetti.medium.com/the-hack-for-sustainable-buildings-8ba3d8ae99b1>

uses, wishes and expectations. The analysis starts by a screening of several existing digital valuation platforms and consulting services (Table 1).

Table 1 - Digital valuation platform and consulting services benchmarked

Name of the solution	Type of solution	Provider	Type of Provider	Technical data	Financial data	Multi-benefit data	Business model
Premium	Digital valuation platform	Prelios valuations		Yes	No	No	nc
Vero Select	Digital valuation platform	Veros		Limited	Yes	No	nc
Valuation Suite	Digital valuation platform	House Canary		Yes	Yes	No	nc
Boweryres	Digital valuation platform	Bowery Valuations		Yes	Yes	No	nc
Wüest Dimensions	Digital valuation platform	Wüest & Partner		Yes	Yes	No	nc
Valoracion.es	Free access - Digital valuation platform		Private Spanish		Yes	No	Freemium
HouseII	Free access - Digital valuation platform		Private Spanish		Yes	No	
TerceroB	Free access - Digital valuation platform		Private Spanish		Yes	No	
BBV Valora	Free access - Digital valuation platform		Private Spanish		Yes	No	
Realo	Free access - Digital valuation platform		Private Spanish		Yes	No	
Red House	Free access - Digital valuation platform		Private Spanish		Yes	No	
DEKRA - technical due diligence	Consulting Services	Dekra	Private - Internatio	Yes	Yes	No	
Emch+ Berger	Consulting Services	Emch+ Berger	Private - Internatio	Yes	Yes	No	
Koris International	Digital valuation platform	Koris International	Private - Internatio	No	Yes	No	
Bureau Veritas	Consulting Services	Bureau veritas	Private - Internatio	Yes	Yes	No	
Savills	Consulting Services	Savills	Private - Internatio	Yes	Yes	No	
Dena	Consulting Services	Dena					
EEC	Consulting Services	EEC					
TÜVRheinland	Consulting Services	TÜVRheinland					
Dupond Sustainable Solutions	Consulting Services	Dupond Sustainable Solutions					
ICP (H2020 project EeMap)	Consulting & Certification Services	GBC	US organisation	No	Yes	No	Link with certification scheme
DEEP	Benchmark		H2020 project	Yes	Yes		Open source

It is interesting to note that some of these platforms have developed partnership to ensure data input. For instance, TerceroB is in 35% owned by Idealista, a platform for selling & renting offers which provides real data. A couple of these platforms have established partnerships to ensure input data: BBVA acquired the big data company Madiva Soluciones to support the BBVA Valora platform and El Mundo has teamed up with yet another big data company — Urban Data Analytics — to produce Red House. Several of these platforms are associated with banks and newspaper webpages to increase their visibility. TerceroB is accessible through the Bankia webpage and Red house is associated with El mundo.

A deeper benchmark was achieved by focusing, on the one hand, on EeMAP¹² past project (Energy efficient Mortgages Action Plan), the benchmark focus on understanding the proposition made by **the Investor Confidence Project (ICP)**¹³ and **DEEP**¹⁴ (**Database of Energy Efficiency Financial Institutions Group**) database, and at the other hand on two private tools **Sustainalytics** and **Workiva** that are multi domain tools specialised in ESG reporting.

As explained in chapter 2.3.1, comparable criteria have been put in place to support the benchmark:

- Type of organisation
- Type of analysis: Static / dynamic / collaborative
- Type of risk: Financial & technical / ESG / EU taxonomy / EU taxonomy + ESG
- Domain: building sector / multi-domain

¹² <https://eemap.energyefficientmortgages.eu>

¹³ ICP – <http://www.eepformance.org>

¹⁴ <https://deep.eefig.eu>

4.3.1 THE INVESTOR CONFIDENCE PROJECT (ICP)

Name: Investor Confidence Project (ICP) / based on H2020 projects Eemap
Provider: GBC
Type of provider: US organisation
Type of solution: Dynamic (Consulting & certification services)
Risks analysis: Credit risk, Asset Risk, Performance risk
Domain: Building sector

WHO - The ICP, administered by the GBCI (Green Business Certification Incorporated, leading the LEED green building program), addresses market barriers inhibiting large scale investment in EE projects.

WHAT - The ICP methodology provides a **standardized roadmap** for project development which awards an IREE (Investor Ready Energy Efficiency) certification. IREE **certification** provides owners and investors with confidence in the energy, financial and environmental performances of building retrofits and allows them to proceed gaining money and time on unnecessary due diligence.

WHY - The variety of risks for owners and investors are grouped in 3 categories:

- Credit risk – related to the capacity of the borrower to repay their debts?
- Asset risk – will the asset increase in value?
- Performance risk (similar to EEnvest Financial risk) – will the project deliver expected returns?

ICP identified that the lack of investment option in EE project was mainly due to the emphasis made on credit risk, overlooking the asset risk and the performance risk. Indeed, credit risk used to be given a maximum importance leading the investment to focus on a small subset of buildings and project owners that have already access to capital. This phenomenon prevents the investors from properly weighting the expected cash flow associated with projects.

Based on the observation that credit risk and asset risk already have a couple of tools available on the market, the ICP insists on addressing the performance risk (EEnvest's Financial risk). ICP approach minimizes performance risk by an effective evaluation and a management of the performance risk. The aim is to underwrite projects based on cash flow instead of credit. This approach was expected to unlock capital for EEI. The ICP protocols leading to the IREE certification are particularly designed to increase the pace of investors' decision-making process.

HOW - ICP protocols define a roadmap for how to best implement existing standards and best practices. They are designed to address a wide variety of EE projects occurring around the globe: different building types, project sizes and scopes, Energy Conservation Measure (ECM) nature and interactivity and country of origin.

WHEN - The ICP protocols specify procedures and documentation that must be completed during the development stage of the EE project. Very financial and technical-oriented, the project document package (Figure 14) of the ICP protocols does not integrate non-energy benefits into the assessment.

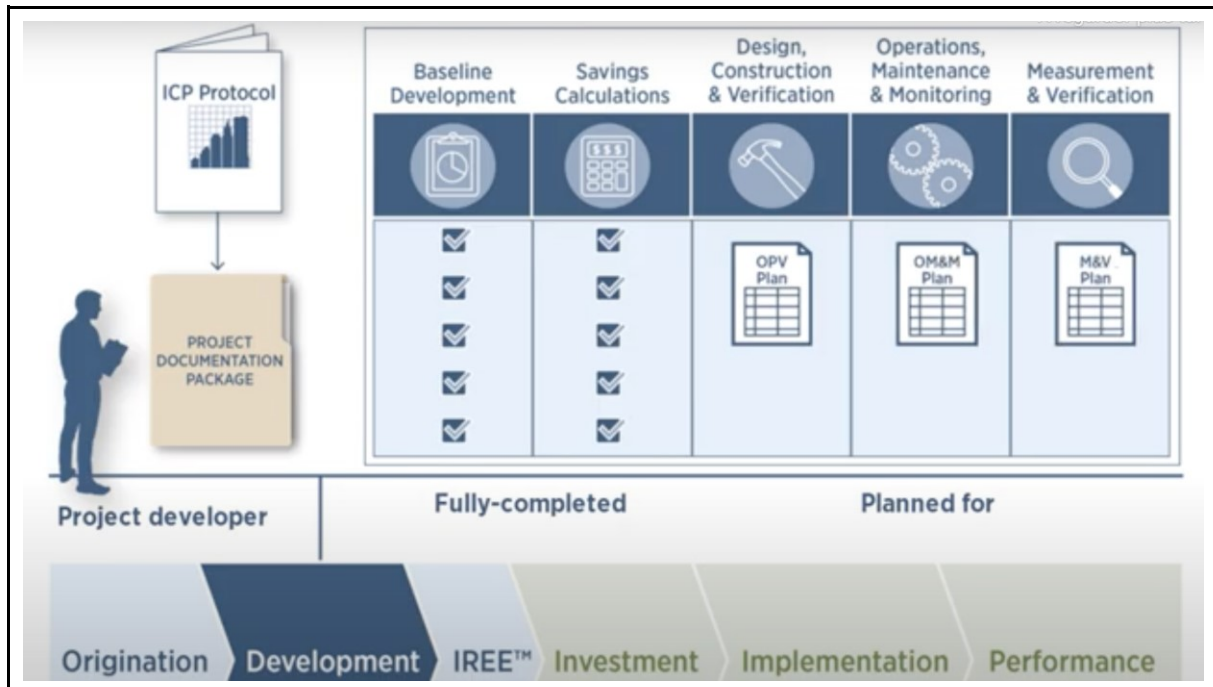


Figure 14 – Life cycle of an EE project, content of Project documentation package, IREE occurrence (certification period in blue, performance period in green)

- Origination: project is conceived,
- Development: baselines are developed, savings calculations are made, ECM are selected, and project approach finalized.
- Investment: the project is analysed by the project owner for approval and investors underwrite projects and offer investments.
- Implementation: project is designed and realized.
- Performance: project become fully operational, ECMs and their operations are continually monitored, their performance is measured and verified against saving projections.

The project documentation package is then validated by a ICP QA (Quality Assurance) assessor, contracted by the GBCI for IREE certification delivery. The assessing organization is vetted for qualification and independent to the project development team¹⁵.

KEY LEARNING

- The ICP protocols are today recognized by investors as best industry practice. EEnvest tools need to reach some early adopters among investors, and then as a second step, to target wider acceptance based on success stories
- As the quality of the EEnvest input data is key in the EEnvest platform, partners developed a Desktop Due Diligence methodology, based on similar principles as ICP

¹⁵ See a complete list of ICP assessors here: <http://www.eepperformance.org/quality-assurance-assessors.html>.

but more project-owner oriented. It is presented as a Project Quality Self-Assessment Tool allowing the rating of the overall probability for the EE project to meet its objectives and generate expected benefits because of high-quality measures foreseen throughout the design, implementation and operational phases. Data input quality is then increased because data generate from a high-quality project.

- In the online guide to IREE certification the level of certification fee depending on the project size can be found (Figure 15). It gives interesting elements to include into the EEnvest Business Model: size of the projects, level of the fee...

Protocol	Registration Fee	Certification Fee	Total Fee	Project size
Targeted	\$100	\$225	\$325	All
Standard	\$250	\$500	\$750	\$75k-\$500K without model
Large/Standard	\$500	\$1,250	\$1750	<\$1M with model
Large	\$750	\$1,750	\$2,500	>\$1 Million with model

Figure 15 – ICP, IREE certification tariffs

4.3.2 DE-RISKING ENERGY EFFICIENCY PLATFORM (DEEP)

Name: De-risking Energy Efficiency Platform (DEEP)
Provider: H2020 project
Type of provider: Consortium of partners
Type of solution: Static (Benchmark)
Risks analysis: Technical risk, Financial Risk
Domain: Building construction

WHAT - De-risking Energy Efficiency Platform (DEEP)¹⁶ is a database for energy efficiency investments performance monitoring and benchmarking. DEEP is not a search & match platform.

HOW - DEEP is an open-source initiative aiming to upscale energy efficiency investments in Europe through the improved sharing and transparent analysis of existing projects in Buildings and Industry (Figure 12). It analyses, compares and provides information on the performance of energy efficiency investments to support the assessment of benefits and financial risks. DEEP contains projects sitting in the 28 European countries of the EU but it does not provide

¹⁶ <https://deep.eefig.eu/>, accessed in December 2020.

information regarding project owners. DEEP shows average KPIs for projects having selected characteristics, relying more on a statistical approach than a quantitative approach.

WHERE - DEEP platform is available in 6 languages (English, German, French, Italian, Spanish and Polish).

A powerful data viewer allows browsing for projects to select data (Figures 16). The following can be selected: Country, Measure Type, Building Type, the level of Verification of the data and a discounted rate for avoidance cost.

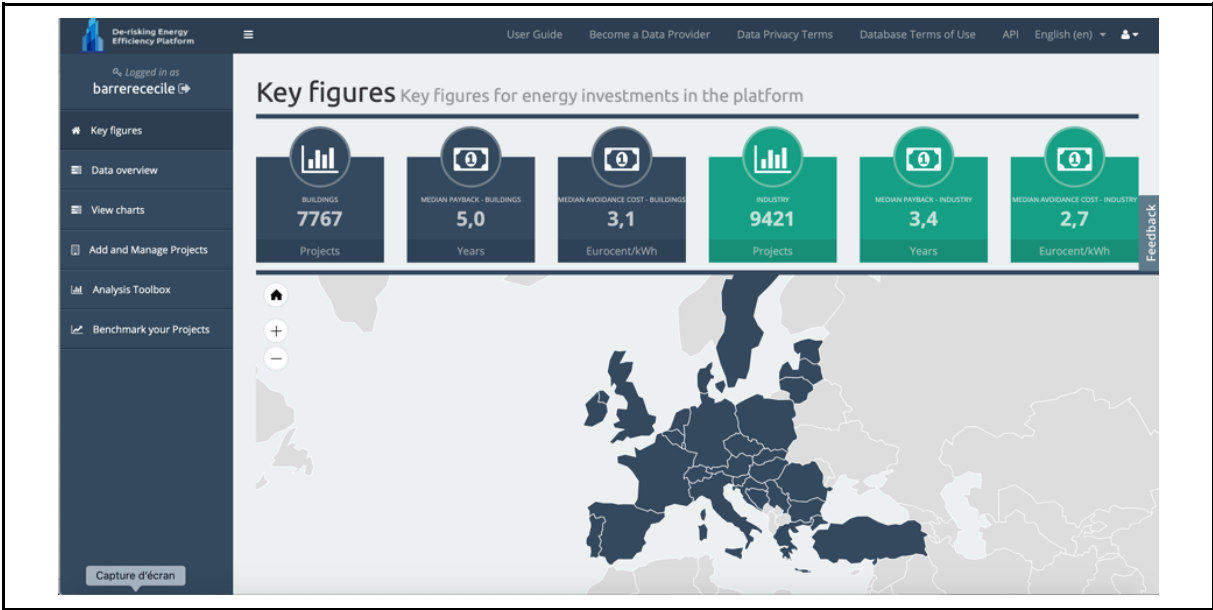


Figure 16 – DEEP, entry portal

KEY LEARNING - EEnvest's interface and graphics should be developed in accordance with DEEP tools. Despite the data input for DEEP have a lower detail, EEnvest should consider a certain level of interoperability, at least in metadata layers.

4.3.3 WORKIVA

Name: Workiva ESG reporting
Provider: Workiva, Inc
Type of provider: private Headquarters: USA
Type of solution: Collaborative - Platform cloud to drive ESG report and progress
Risks Analysis: ESG, Financial Risk, Sustainable factors
Domain: Multi-domain

WHAT: It provides a cloud-based connected and reporting compliance platform that enables the use of connected data and automation of reporting across finance, accounting, risk, and compliance. Workiva's reporting software was created for executives that want to integrate data from different systems, and desire software that updates automatically.

WHY: For Nicolas Letavernier, Sales Director France at Workiva, three figures illustrate the problem: "69% of organisations have made strategic decisions based on incorrect data. 75% of CFOs are afraid of reporting bad data and 75% of finance professionals think their existing solutions are not effective. By creating their 100% cloud and connected platform, Workiva's teams have changed the way companies produce and communicate their reports.

HOW: The company employs approximately 1,300 people and has offices in 16 cities in the United States, Canada and Europe.

KEY LEARNING:

The majority of Fortune 500 companies use Workiva's software.

European companies use Wdesk to comply with European Securities and Markets Authority's reporting mandates.

Global Legal Entity Identifier (GLEIF) deployed the Workiva platform to create their annual report which was then showcased by ESMA as a paragon for European Single Electronic Format (ESEF)-compliance reporting.

4.3.4 SUSTAINALYTICS

Name: Sustainalytics EU Taxonomy
Provider: Sustainalytics, Morning Star company
Type of provider: private Headquarters: Netherland
Type of analysis: Static (Report)
Risks analysis: EU Taxonomy
Domain: multi-domain

WHAT: Sustainalytics' EU Taxonomy Solution assesses companies' alignment to the Climate Change Mitigation objective, supplementing reporting data with sophisticated estimation and proxy approaches to give a more holistic picture of a company's overall alignment where reporting is limited.

HOW: Sustainalytics' EU Taxonomy Solution assesses companies' eligibility and alignment to the Climate Change Mitigation objective, supplementing reported data with estimations that rely on proxies to give a more holistic picture of a company's alignment. It will evolve to cover changes in the regulatory requirements as well as additional objectives as the relevant standards are defined or as sufficient data becomes available.

KEY LEARNING: In 2017, ING Group issued the first sustainability improvement loan where the interest rate of the loan is pegged to the sustainability rating of the lender, as measured by Sustainalytics.

4.3.5 EENVEST POSITIONING

Name: Investor Confidence Project (ICP) / based on H2020 projects CPEU and I3CP
Provider: EEnvest (H2020)
Type of provider: Public research
Type of solution: Dynamic (Evaluation platform)
Risks analysis: EU Taxonomy + ESG
Domain: Building sector

The comparison criteria defined in the introduction to Chapter 4.3 are used here to position the EEnvest platform on a matrix against the EEI tools in the benchmark:

- Type of analysis: Static / dynamic / collaborative
- Type of risk: Financial & technical / ESG / EU taxonomy / EU taxonomy + ESG
- Domain: building sector / multi-domain

Conclusion of the benchmark

The EEnvest platform was positioned on a matrix based on the benchmark analysis (Figure 17). EEnvest is the most advanced tool based on the number of criteria taken into account in the evaluation among the tools studied in this benchmark because it evaluates the most risk factors and benefits of projects. It provides a complete evaluation.

EEnvest tools perform dynamic assessments that allow exploring different scenarios. Unlike Workiva, EEnvset tools do not include a collaborative component (to allow teams to work together on a risk analysis), however this functionality could easily be added during future development of the tools.

EEnvest tools are specialized for the construction sector and investments involving Energy Conservation Measures and renewable energy sources integration as assets in the building. This suggests that the EEnvest tools address a niche market.

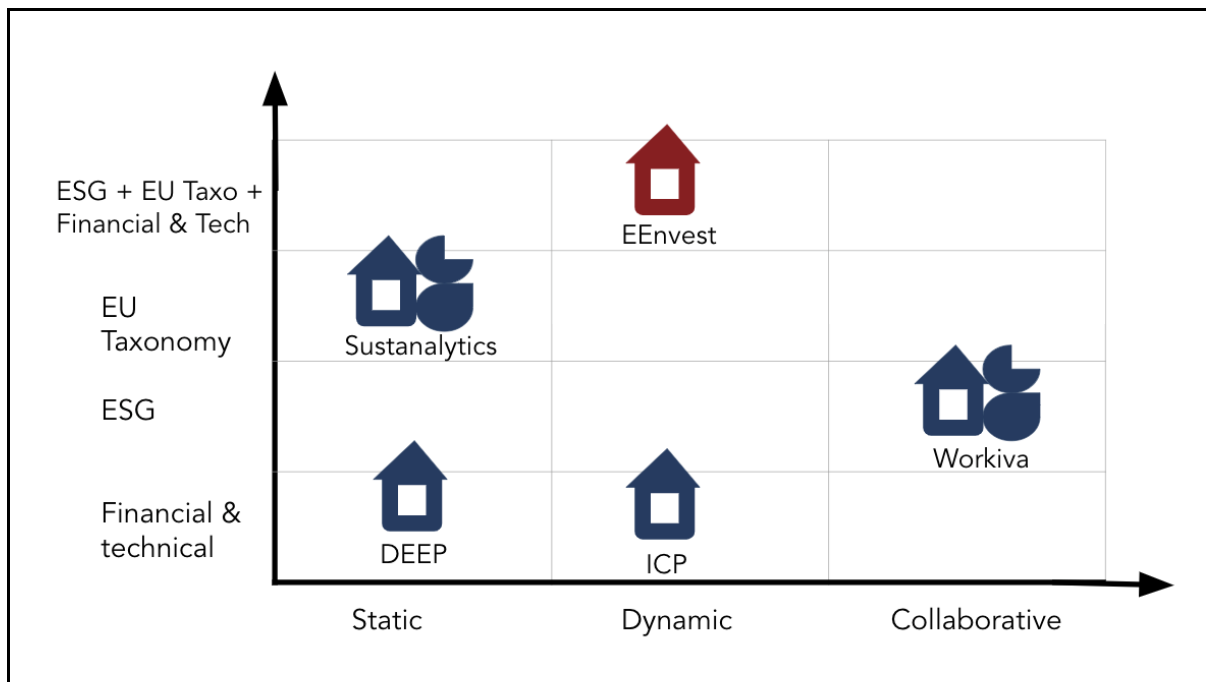


Figure 17 – EEnvest positioning based on benchmark

Key findings of the benchmark:

EEnvest tools are at the forefront of innovation and environmental requirements. They will first be used by convinced **innovators**, concerned about the energy transition and who do not act out of a regulatory obligation or for marketing reasons (greenwashing).

Actors who only want to meet the requirements of the EU taxonomy or ESG reporting without being more interested in the environmental and social impact will choose simpler and multi-domain tools.

EEnvest tools are likely to be used by asset managers or sustainability teams (i.e. in investment banks). they have to check sustainability and prioritize the sustainable investments over others.

In particular the asset managers should act in order to maximize the cash flow to the fund. So they have to decide and go for best way in order to increase the rental income and the asset value, which has a lot to do with multi-benefits and willingness to pay from the tenants (rapidly and well before the execution of a project).

5. VALUE PROPOSITION AND SEGMENTATION

The value proposition is the beating heart of the Business Model Canvas and it is very important to describe it with precision and list all value aspects that could be matching customer segments' needs. This chapter presents the segmentation analysis done in order to identify and qualify the potential market and the value proposition for the EEnvest tools and platform targeting each customer segments.

5.1 SEGMENTS AND EENVEST FUNCTIONALITIES

5.1.1 MIRO BOARD

During the 3rd project meeting in May 2020, R2M Solution organized a workshop on the EEnvest segmentation and value proposition (for details on this workshop please see Annex C).

5.1.2 EENVEST FUNCTIONALITIES

The EEnvest tools integrate different types of functionalities which have been grouped into six main categories encompassing evaluation functionalities (F01, F02), support functionalities (F03, F04) and benchmarking functionalities (F05, F06) (Table 2).

Table 2 - Validated list of functionalities

	TITLE	Description
F 01	De-risking EE projects (covering technical and financial risks)	Technical risks Financial risks
F 02	Evaluation of the performance of the project (KPIs)	Multi-benefit analysis
F 03	Cloud	(Cloud) Storage (of input data, results, data validation / blockchain...) Cloud execution (models benchmark)
F 04	Search & Match	Find a renovation project to invest in Find an investor for my renovation project
F 05	Benchmark against other projects on the platform	KPIs selection to build a tailor-made benchmark
F 06	Benchmark against market average	Access to generic information upon benchmark

5.1.3 CUSTOMER SEGMENTATION

Extensive work was carried out to determine the relevant segments to be considered for the EEnvest tools:

- During the first project meeting (m6), partners defined together a first list of the platforms customers segments, their wishes and their needs thanks to a workshop organised by R2M Solution.
- Interviews with project partners using Ad Libs tools.
- An exploitation workshop was organised during the second project meeting (m12). As the workshop took place remotely, the MIRO software tool was used to facilitate discussion during the workshop. Thanks to the comments collected during this online workshop, R2M could validate the segmentation of the possible users of the EEnvest platform, the functionalities and to rank the value of each functionality for each segment.

All members of the consortium gave their opinion and were able to discuss the segmentation. The result of this work is summarised in the Table 3 below.

Table 3 - Validated list of customer segments

	TITLE	Description
S 01	Investor	Investors who search energy renovation project to invest in
S 02	Project owners & Not Investor	Project owners who do not want to invest themselves in their energy renovation project and search for investors
S 03	Project owners & Investor	Project owners who invest directly in their energy renovation projects, and need tools to facilitate their decision-making process.
S 04	Brokers	Intermediates in-between investors and project owners who need to validate their estimations. (This segment is less mentioned than the others)

5.2 VALUE PROPOSITION PER CUSTOMER SEGMENT

5.2.1 ATTRACTIVENESS ANALYSIS

Based on the previously presented Ad libs tool, the consortium partners conducted a value analysis by functionalities and customer segments and filled Value Proposition Canvas. The results of the working sessions are presented below.

Workshop on value analysis: the members of the consortium were asked to rank the attractiveness of each segment for each function according to their opinion and knowledge of the market.

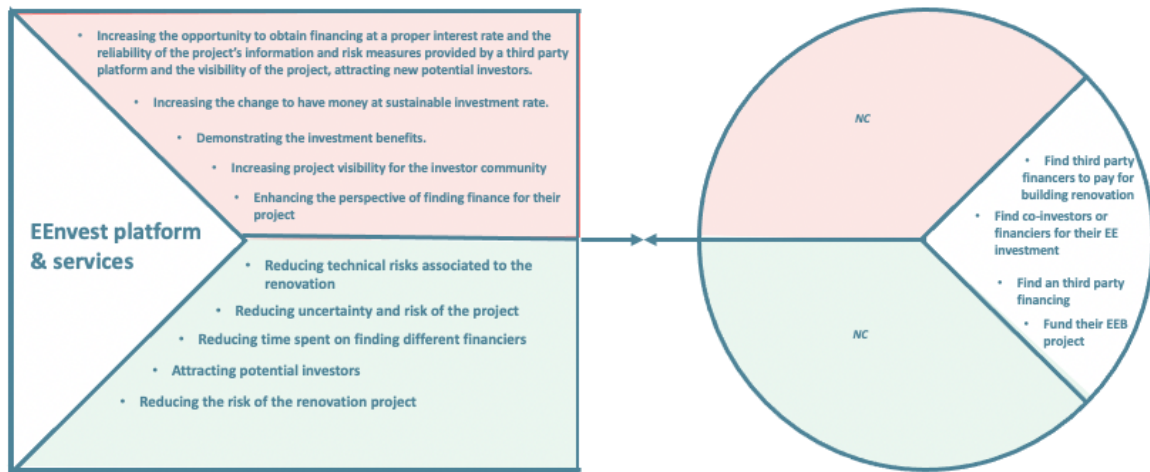


Figure 19 - Value proposition design for the segment S01 (Investor/Financer/Asset owner who invests)

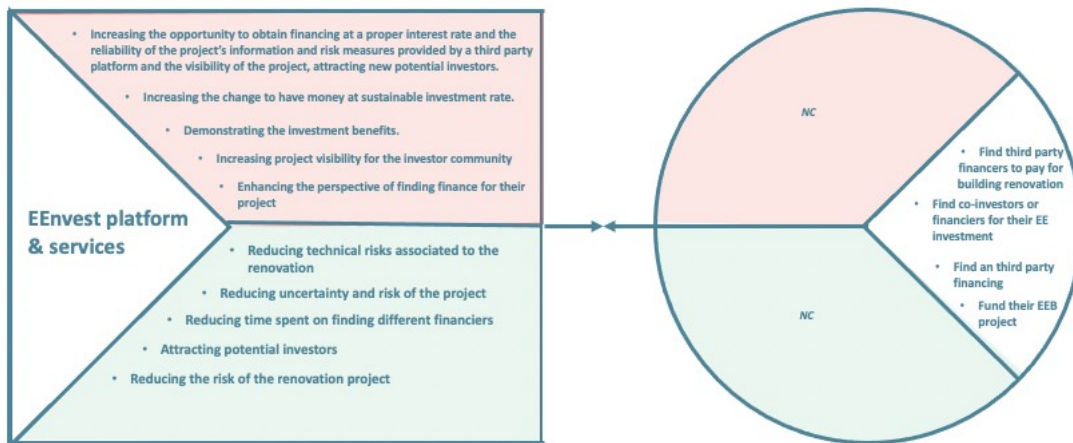


Figure 20 - Value proposition design for the segment SO2 (Project Owner & Not Investor)

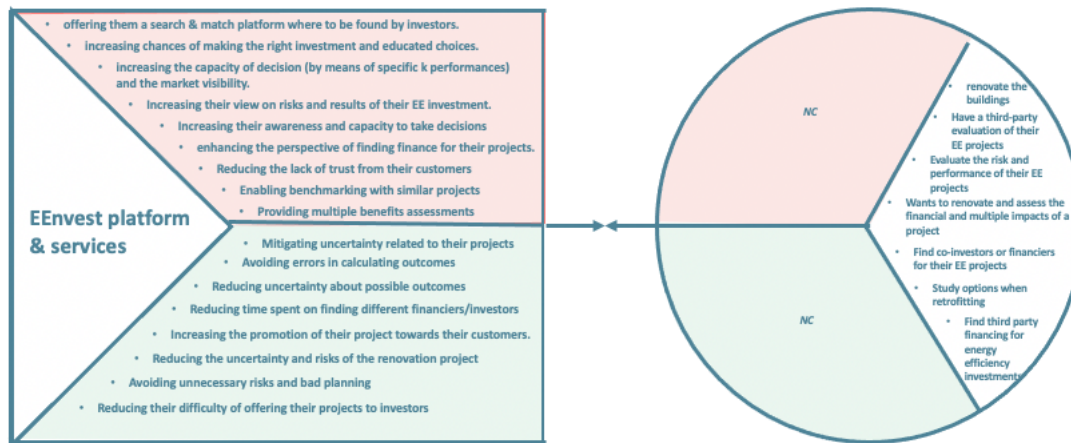


Figure 21 - Value proposition design for the segment S03 (Project Owner & Investor)

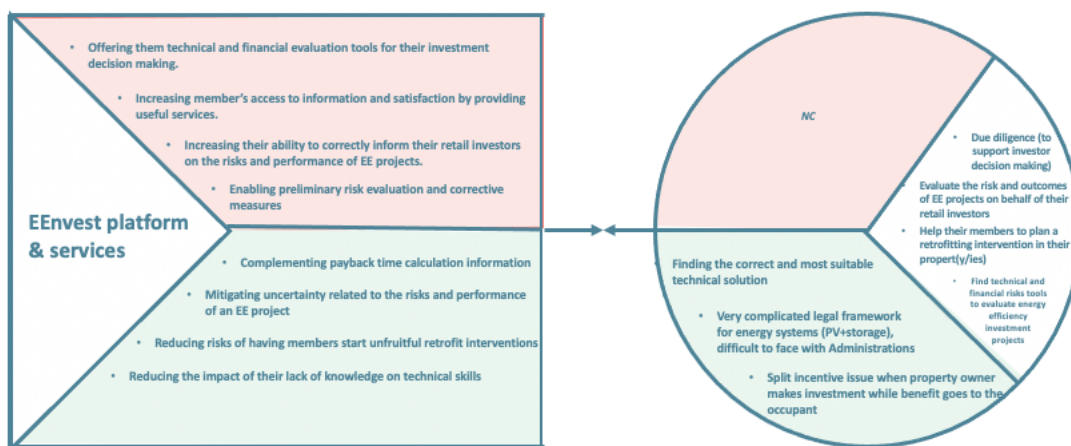


Figure 22 - Value proposition design for the S04 (Intermediates Valuators/asset managers / crowd lending platforms / property owner national association)

Synthesis of the pain:

The biggest barrier to renovation remains the cost of the intervention itself. Energy efficiency investments face unique hurdles, such as high up-front costs, long pay-back periods, and small-scale individual investments, all of which contribute to the investment gap needed to reach the climate goals set in the Paris Agreement. Energy-efficient building renovations can be expensive, and owners (or tenants) may not have the means to finance them¹⁷.

Synthesis of the gain:

To summarize, the EEnvest benefits (gain creation or pain reduction) can be grouped into 4 categories:

Financial

- Risk reduction for product and fund construction / Investment roadmap

¹⁷ <https://pietrovisetti.medium.com/the-hack-for-sustainable-buildings-8ba3d8ae99b1>

-
- Reduction of time & cost to screen projects for product and fund construction / Investment roadmap
 - Saving time for portfolio management and reporting

Technical

- Allowing informed decision to plan the technical program of the renovation

Commercial

- Better visibility and readability to investors

Key findings of the value proposition:

For all segments the value of EEnvest tools is perceived at two key moments of the investment process:

- Design of the EE project: EEnvest allows to analyze the project, quantify the risks and adjust the project technical program to make it as low risk as possible.
- Finding investors: EEnvest provides reporting features needed to produce KPIs on the investment and convince investors

6. EENVEST PLATFORM BUSINESS MODEL

6.1 EENVEST PLATFORM BUSINESS MODEL CANVAS

The EEnvest platform including all the functionalities is not yet market ready. All partners recognize that additional IT development is needed to reach a platform that could be commercialized, including further improvement to user experience and workflows. However, we can already outline business models.

6.1.1 MULTI SIDED PLATFORM

EEnvest is a *multi-sided platform*, which means that it brings together two different groups of customers (investors and project owners). According to Business Model Generation¹⁸ such platforms are of value to one group of customers *only if* the other groups of customers are also present. The key is that the platform must be able to attract and serve all groups simultaneously in order to create value.

Usually, multi-sided platforms solve this dilemma by subsidizing one of the customer segments (low cost or free services to attract them on the platform). To do so, it is very important to understand who should be subsidized and how to price correctly.

The main features of the **Business Model Canvas of such platform** are the following:

- The key resource required for this business model pattern is the platform.
- The three key activities are platform management, service provisioning, and platform promotion.
- The main costs incurred under this pattern relate to maintaining, developing and supporting the platform.
- The value proposition usually creates value in three main areas: by attracting user groups (i.e. Customer Segments); provide services through the platform, matchmaking between Customer Segments.
- Two or more customer segments each have their own Value Proposition and associated Revenue Stream. Moreover, one Customer Segment cannot exist without the others.
- Each Customer Segment produces a different revenue stream. One or more segments may enjoy free offers or reduced prices subsidized by revenues from other Customer Segments. Choosing which segment to subsidize can be a crucial pricing decision that determines the success of a multi-sided platform business model.

6.1.2 BUSINESS MODEL CANVAS OF THE PLATFORM

The information described in previous paragraphs allow presenting in Figure 23 below one version of business model canvas for the EEnvest multi-sided platform. It compiles a few key findings of the analysis done during the project, commented below the canvas.

¹⁸ Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers - 2010

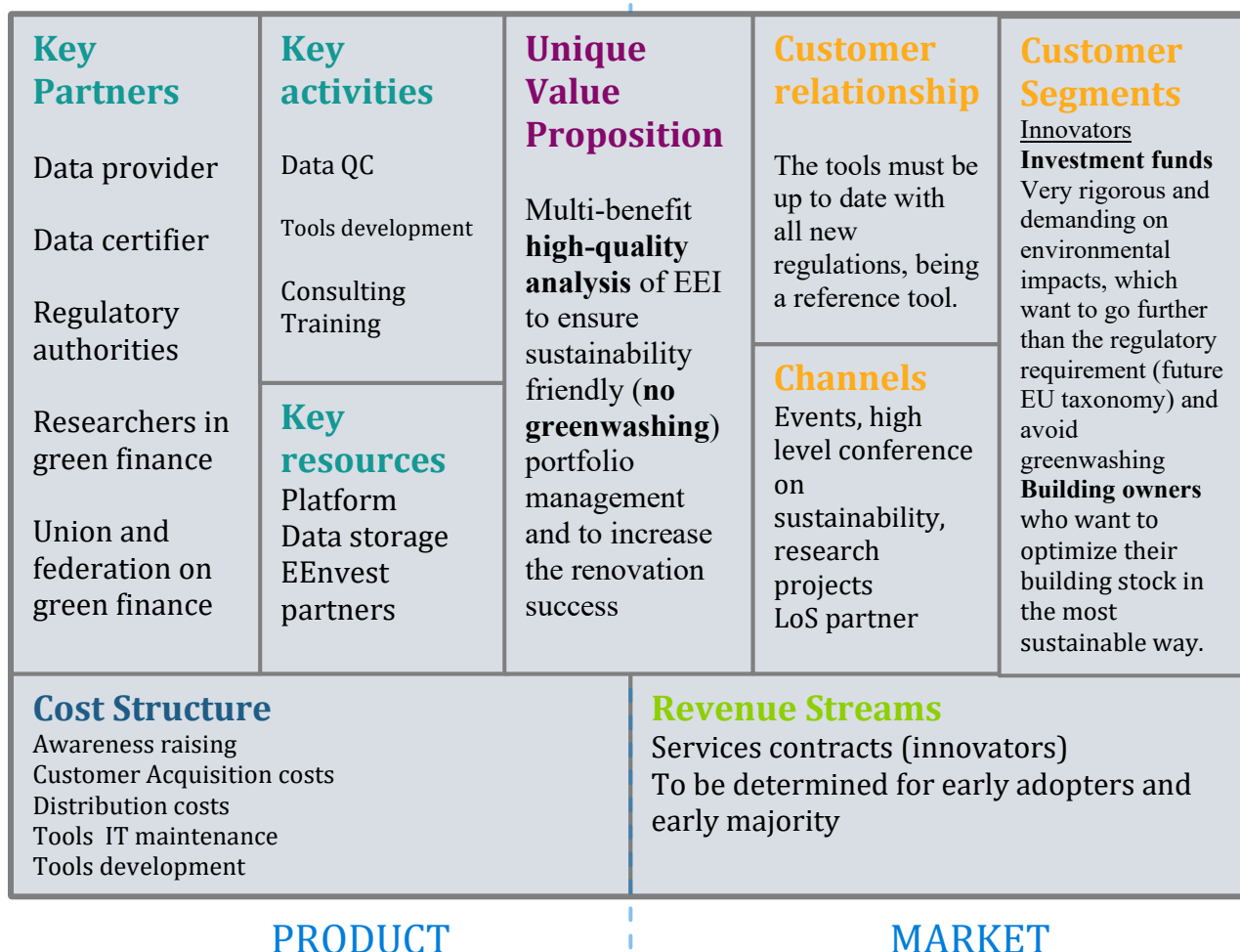


Figure 23. Business model canvas

Key findings of business model:

To reach the market of Innovators and at the same time continue the development of the tools to hope for a mass adoption of the EEnvest tools the **costs are quite high**. At present the **revenue structure is not yet found**, which is quite common for this type of innovation.

Different types of pricing will have to be tested in order to determine the one that attracts and retains the most users while compensating for the costs incurred by the use and development of EEnvest tools.

6.2 FINANCIAL POTENTIAL OF THE EENVEST PLATFORM

In the first phase of the project a financing plan for the platform (containing all EEnvest tools and focusing on the search & match functionality) was drawn up.

At the end of the project, this scenario is not the dominant subject of reflection because on the one hand the platform is not yet ready for commercialization on the market and on the other

hand the various market studies and feedback from the field have shown that the tools used individually have more potential. They correspond more to the reality of uses. Thus, the financing plan developed in the first phase of the project is still coherent, but it has not been updated during the second part of the project

6.2.1 FINANCIAL METHODOLOGY

There are two different approaches to develop scenarios.

The first proceeds by extrapolating from the past and looking for major trends in the environment. This approach generally leads to the creation of “continuity” scenarios that reinforce existing paradigms. They rely more on forecasting techniques and tend to infer the future based at best on what already exists, sometimes on the past.

The second approach is based on the development of “rupture” scenarios through factors of uncertainty. These factors are those that are postulated to have a strong impact (positive or negative) on the strategy or project.

Both of these cases should be opened. All the alternatives should be discussed and analyzed, then all possible fields explored to be rejected, put back at the center of the value creation process or put on hold for further information.

6.2.2 REVENUE STREAM SCENARIOS ENVISIONED

Estimations made at M24

The reasoning behind the revenue stream maturation follows the logic: who pays for what?

Who pays?

- A. The project owner is charged to access to the platform.
- B. Some functionalities of the platform are free and other are charged (e.g., free of charge project basic factsheet without risk analysis).
- C. Charge only the investors to access the platform. Project owners have free access to feed the platform with projects.
- D. A fee defined as a % of the operation is taken for each deal finalized (commission).

For What?

- 1. Pay as you go (e.g., AWS, service is metered)
- 2. Pay per user (e.g., Matlab)
- 3. Subscription (e.g., Netflix)
- 4. Commission (e.g., Airbnb)
- 5. Freemium (e.g., Spotify)

Table 2 presents a generic definition of the pricing logic envisioned. You can then combine options to create scenarios:

- Scenario A.1, A.2, A.3: The project owner is charged to access the platform. In this model different pricing logics could operate: pay per use, pay per user, subscription.
- Scenario B.5: Some functionalities of the platform are free and others are charged (for example to launch a basic project fact-sheet without risk analysis is free for the project owner but to launch the complete factsheet risk analysis is charged). In this model different pricing logics could operate: freemium
- Scenario C (C.5 for the project owner, C.1/2/3/4 for the investor): Charge only the investors to access the platform. In this case, project owners have free access to feed the platform with projects.
- Scenario D.4: A fee defined as a % of the operation is taken for each deal finalized. In this model the pricing logic will be what is called commission.

Table 2 - Definition of common pricing logic

Pay per use / pay as you go (e.g., AWS):

The use of a product or service is metered, and customers are charged each time they use the service¹⁹. The advantages are that the customers pay only for their use and there are no initial subscription costs nor additional costs. The inconveniences for the user are to have high costs during peak use, they could prefer more balanced expenses. However, this can work very well for customers with fluctuating service usage.

Pay per user (e.g., Matlab)

Per-user pricing is a Software as a Service (SaaS) pricing model where users pay different amounts depending on the number of people using the service. It's similar to the model used by many companies for physical software licensing, but many experts claim that it's not perfect. According to Price Intelligently agency²⁰ per user pricing kills your growth and sets you up for long term failure, because the number of users is rarely where value is ascribed to your product (it doesn't take into account that one company could have several users for the same activity, neither the inactive users that are not valuable...).

Subscription (e.g., Netflix)

The subscription-based business model is a business model that charges customers a recurring fee — typically monthly or yearly — to access a product or service. Recurring revenue models lead to higher revenues and stronger customer relationships²¹.

This compounding growth is what makes customers so powerful here. Through subscription, customers become more valuable the longer they use your product.

Commission (e.g., AirBnB)

The most popular business model for modern marketplaces is to charge a commission from each transaction. When a customer pays a provider, the platform facilitates the payment and charges either a percentage or a flat fee²².

The biggest benefit of this revenue model is that providers are not charged anything before they get some value from the marketplace. This is really attractive to the providers. At the same time, from the marketplace's point of view, this model is usually the most lucrative: you get a piece of all the value that passes through your platform. The best-known marketplace platforms—like Airbnb, Etsy, eBay, Fiverr, TaskRabbit, and Uber—all use commissions as their main business model.

Freemium (e.g., Spotify)

Provide a good amount of functionality for free, then have a range of upgrades. This works well if the add-on services have real value for the target audience, but there's always a danger that most people won't need - or want - to upgrade²³.

Example of a Freemium model with Flickr, the popular photo-sharing Web site acquired by Yahoo! in 2005, provides a good example of a freemium business model. Flickr users can subscribe for free to a basic account that enables them to upload and share images. The free service has certain constraints, such as limited storage space and a maximum number of uploads per month. For a small annual fee, users can purchase a "pro" account and enjoy unlimited uploads and storage space, plus additional features.

¹⁹ Source: <https://reasonstreet.co/business-model-pay-per-use/>

²⁰ Source : <https://www.priceintelligently.com/blog/bid/198499/stop-per-user-saas-pricing-you-re-killing-growth>

²¹ Source: <https://www.priceintelligently.com/blog/subscription-business-model>

²² Source: <https://www.sharetribe.com/academy/how-to-choose-the-right-business-model-for-your-marketplace/>

²³ Source: <https://reasonstreet.co/business-model-freemium/>

Examples of Freemium: Candy Crush, Survey Monkey, LinkedIn, Evernote, Box, DropBox, Google Apps, Hulu, Skype, Spotify, Slack, Tencent, Trello

6.2.3 SCENARIO OF FINANCIAL POTENTIAL

During the first phase of the projet, R2M Solution developed a financial model of the entire EEnvest platform, which at the time focused on the search and match functionality. The aim of this version of the financial potential was to initiate reflections and discussions with the project partners, and to provide key metrics to guide future interviews with prospects.

In the example presented below, the marketing value (traffic and monetization) are estimations based on the knowledge of the EEnvest team.

However, revenue sharing figures between EEnvest partners is in the table below a virtual scenario which could be refine when the EEnvest platform will be commercialised (including the Search&Match functionalities)

Some partners have the exploitation and will reward other partners based on internal agreements, so that the platform stays live, updated and improved and no one is expected to work for free.

The table 3 below present a semi-theoretical financial forecast of EEnvest Search&Match platform in France:

Table 3 - Financial plan - first draft - starting figures

	YEAR 0 / testing	YEAR 1	YEAR 2	YEAR 3
MARKET PENETRATION				
Traffic				
Number of actors seeing the platform	200	1000	2000	5000
Number of investors seeing the platform	100	500	1200	2500
Number of association & other seeingthe platform	20	100	150	500
Numbers of Building owners seeing the platform	80	400	900	2000
Suscription				
SCENARIO A				
New Building owners suscribing on the platform	5	12	30	60
conversion rate		3%	3%	3%
Clients form N-1 still suscribing		4	10	25
Retention rate		80%	63%	63%
TOTAL Building owners	5	16	40	85
SCENARIO B				
Number of Building on the platform per owners		2,5	2,5	2,5
Numbers of building on the platform		40	100	213
SCENARIO C				
Number of investor who suscribe to see the full factsheet of building		200	500	850
conversion rate		40%	42%	34%
SCENARIO D				
Number of deal		15	52	120
conversion rate		38%	52%	56%
Average price of the renovation per m2		500 €	700 €	700 €
Average m2 per building		1000	1000	1000
Average price per operation or renovation		500 000 €	700 000 €	700 000 €
Amount of business thanks to EENVEST		7 500 000 €	36 400 000 €	84 000 000 €

REVENUE STREAM			
SCENARIO A			
Unit price to subscribe to the platform for building owners	4 800 €	4 800 €	4 800 €
Total revenue	57 600 €	144 000 €	288 000 €
SCENARIO B			
Unit price to launch a building factsheet for building owners	1 500 €	1 500 €	1 500 €
Total revenue	60 000 €	150 000 €	318 750 €
SCENARIO C			
Unit price to subscribe to the platform for investors	300 €	300 €	300 €
Total revenue	60 000 €	150 000 €	255 000 €
SCENARIO D			
% of the operation for each deal	0,50%	0,50%	0,50%
	37 500 €	182 000 €	420 000 €
COST STRUCTURE			
Communication & Biz development	60 000 €	40 000 €	40 000 €
Maintenance	5 000 €	5 000 €	5 000 €
Data hosting / blockchain	5 000 €	20 000 €	50 000 €
Distributor retribution	0%	0 €	0 €
IES, EURAC, SINLOC retribution - SCENARIO A	0%	0 €	0 €
IES, EURAC, SINLOC retribution - SCENARIO B	0%	0 €	0 €
IES, EURAC, SINLOC retribution - SCENARIO C	0%	0 €	0 €
IES, EURAC, SINLOC retribution - SCENARIO D	0%	0 €	0 €
BALANCE			
SCENARIO A	-12 400 €	79 000 €	193 000 €
SCENARIO B	-10 000 €	85 000 €	223 750 €
SCENARIO C	-10 000 €	85 000 €	160 000 €
SCENARIO D	-32 500 €	117 000 €	325 000 €

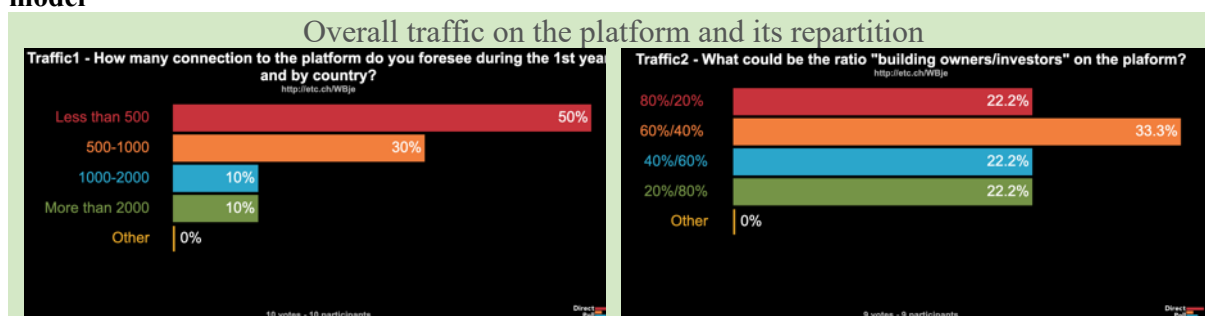
In those optimistic and early scenarios, the EEnvest platform will be at the breakeven two years after its launch. This will allow the platform to continue after the end of the H2020 funding thanks to compensation mechanisms (EURAC, SINLOC, IES, distributor retributions).

6.2.4 CONSORTIUM PARTNERS POLL REGARDING KEY METRICS FOR THE FINANCIAL MODEL

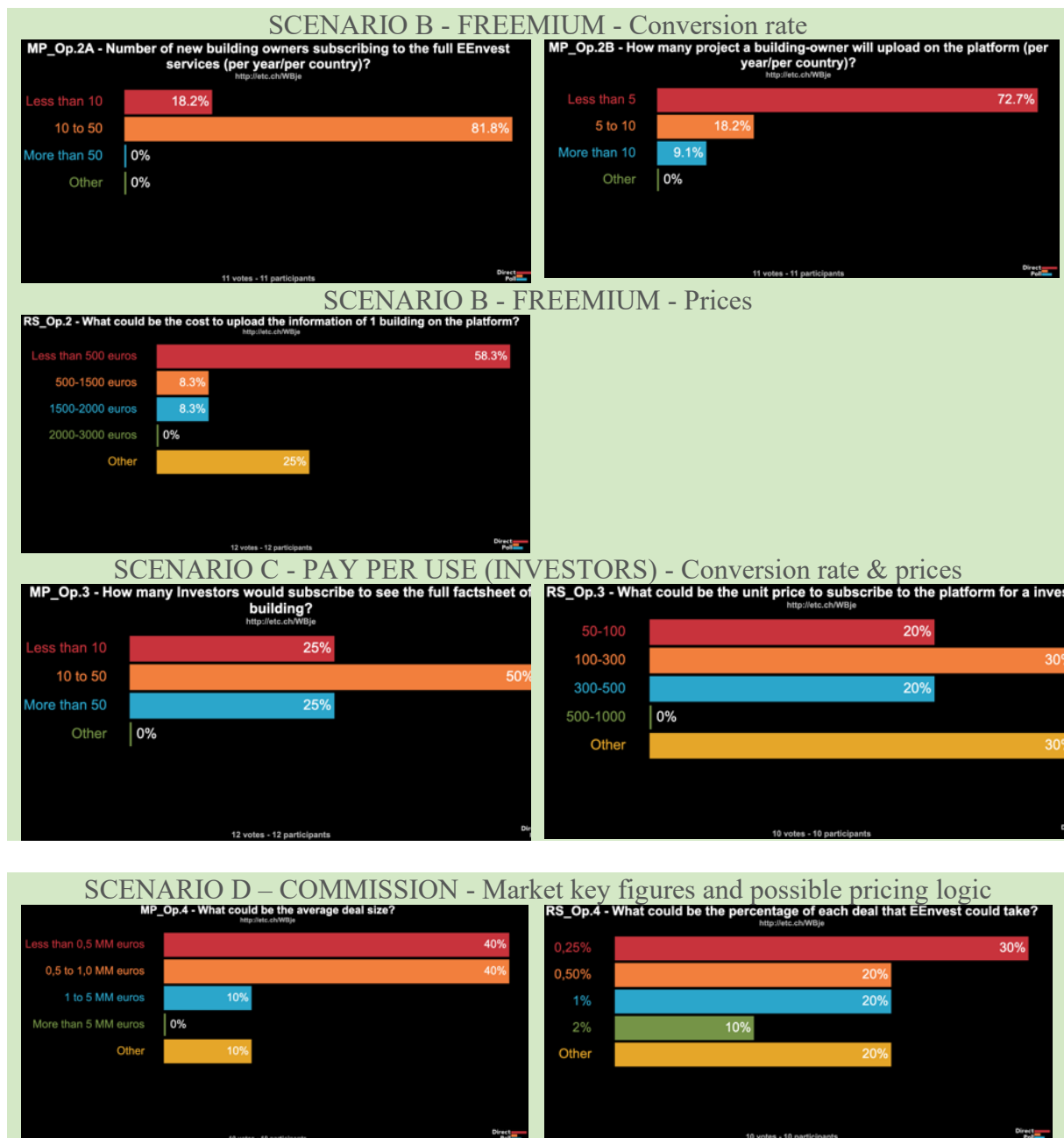
During the 4th virtual project meeting on the 2nd and 3rd of December 2020, an exploitation workshop has been held to discuss key metrics of the business model proposed by R2M solution. The web-based tool Direct Poll²⁴ was used. This tool allowed doing a live poll and sharing results for discussions during the session.

Table 4 presents the results of the poll.

Table 4 - Questions raised during the 4th project meeting on the key metrics of the financial model



²⁴ <https://directpoll.com/>



The answers given by the project partners to these questions are either very convergent or very divergent. Divergent answers are interpreted as having a high degree of uncertainty.

- Regarding the traffic, half of the partners believe that in the first year after the launch of the platform, less than 500 actors would take a look at the EEnvest Search&Match platform. Responses to the poll on the ratio between investors and project owners are totally divergent, none of the options has significant more votes than the others.
- If Scenario B is chosen (Freemium pricing), it is estimated that 10 to 50 project owners could subscribe to the EEnvest platform the first year. Each of those project owners could have less than 5 renovation projects per year uploaded into the platform. The price to upload a factsheet on a renovation project could be less than 500 euros per project. Discussions brought that project upload might be free to attract more investors who would pay to see the project factsheets.

-
- If Scenario C is chosen (Pay per use for investors), conversion rate would probably be lower than in Scenario B. 25% estimate that less than 10 investors could subscribe to the EEnvest platform the first year. Under Scenario C, the estimate of the price metric is less certain, opinions diverge.
 - Under Scenario D (Commission), the estimation of the average size of a renovation project and the % taken as commission were requested from the consortium members. These answers were diverging.

Key findings of financial scenario:

The extensive knowledge accumulated during the project by the partners about the needs of the market has led to the conclusion that attracting users from both parties (investors and building owners) to have a search & match functionality is an interesting idea but it requires a large **mass of users** on the platform so that the **platform is alive** and does not lose its usefulness and on the other hand so that the **cost of acquiring users** is not too high. Thus, the above scenario defined at M18 is considered unrealistic at M36.

Indeed, what had been considered to be the heart of EEnvest's Value Proposition at the very beginning of the project - the search & match functionality - is in fact only an additional functionality that could be implemented when the market is more mature. In the short term, the Value Proposition is focused on data-driven risk assessment and the provision of well-constructed reports.

7. BUSINESS MODELS OF TOOLS

As explained earlier in this report, at the end of its timeline, the project has produced several tools which can be commercialised independently, without being integrated into the EEnvest platform. For each of these tools the business model is still very open because the format of the tool is not yet definitive. Indeed, there is no specific independent IT tool that has already been developed for each of these tools. Only the calculation cores exist, and these can be either:

- Be adapted and integrated within the investors' IT tools
- Serve as a tool to support a service provided by a member of the consortium
- Be developed as an IT tool that could be marketed individually as an on-the-shelf product.

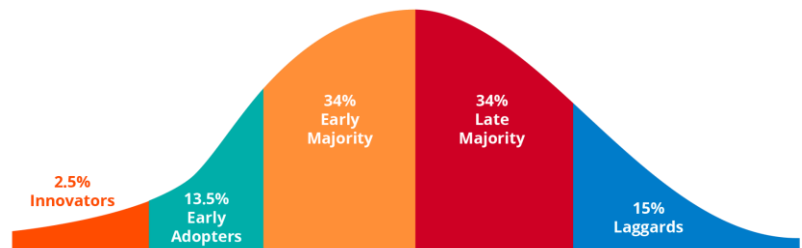
The choice between one or the other of these possibilities will depend on the first opportunities encountered on the market.

In order to get first ideas of these possible market integrations we have made business cases.

At the end of the project, the EEnvest technological tools reached a TRL 7. A detailed explanation of the actual use made of the tool at the end of the project is carried in the deliverable *D7.3 Business and replication of the EEnvest tools*.

To determine what the next priorities for the development of the tools will be, business cases have been made.

To do this we thought about hypothetical scenarios of use of EEnvest tools by segments of actors that we do not consider as innovators but as **early adopters** or **early majority** as defined by the theory of diffusion of innovation.



So in this section we have studied the more distant use of EEnvest tools by banks and ESCOs and asset management companies.

These scenarios were realized through interviews that we conducted with a representative of each organisation. During these interviews we set up a creative process of *Design Fiction* in order to explore with them the implications of future developments and the possible uses of the EEnvest tools.

Organisation	Name	Date
Belfius (bank)	Joost Declerck	24 May 2022
Volksbank (bank)	Chiara Dipasquale	31 May 2022
R2M Spain (ESCO)	Raymond Sterling	30 May 2022
Prelios SGR	Sara Canepa	Phone calls May 2022

7.1.1 BUSINESS CASES 1 – BANK - BELFIUS

Belfius is a banking and insurance services company headquartered in Belgium.

The main activities of Belfius Bank and Insurance are the granting of credit to the public sector, the provision of financial services to individuals and businesses (retail and commercial banking) and insurance.

Belfius lends money mainly to public buildings or social housing, for operation including guarantee of performance.

They hardly finance tertiary buildings, nor small projects (for small projects it would be necessary to be able to cluster more projects in a pool but rarely this can happen).

Decision making process for EEI

Belfius is not an investor but lends money through loans, so it does not invest directly in EEI operations. To choose whether to finance an operator wishing to carry out EEI operations, Belfius looks at its financial reliability, its creditworthiness.

The client must provide Belfius with the information requested of it and with any evidence proving the reliability of the investment. If necessary, the client requests and collects information from third party actors (promoter, the ESCOs, the owner, etc).

The bank must assess whether the data transmitted by the customer is reliable and consistent. But in the end, the bank always depends on the data provided by the customer, the bank does not carry out research on its own to find information. The client is therefore dependent on its ability to provide organised and coherent information.

Financial – Technical – Multi-benefit risks

Credit analysts have generic training, Belfius has a specialized team for Real Estate, but this team has no training for energy renovation and EEI.

As part of an EEI, customers must provide financial risks and a table of the measures that have to be put in place to meet energy savings goals.

The multi-benefits are not considered in the decision-making phase (before the investment) but could be useful for the reporting required after the investment (ESG, EU Taxonomy).

Perceived value of EEnvest tools

EEnvest tools can be useful in two phases for a bank:

- **before the investment**, to support the decision-making process
- **after the investment** to carry out the reporting of the bank (and for the reporting of the client).

Thanks to the EEnvest tools, Belfius could **save time** by receiving data in the same format for all its projects. Also, the format of the data from the EEnvest tools would be directly compatible with the format he asked them (ESG, EU Taxonomy).

The possibility for the customer to assess the **level of trust** of the data shared with the bank is an important tool for the bank (some ESCOs already carry out this type of reporting).

EEnvest tools make it easier to analyse and discuss **project assumptions** with the bank's customers.

The use of the EEnvest tools could allow Belfius to **build a database** of these EEI projects and thus make it possible to capitalize on the information.

Possible scenarios

Even though Belfius has a high perception of the value they estimate that the EEnvest tools would rather be purchased by their clients rather than themselves.

The bank may not commercially promote or prescribe EEnvest tools but **may inform its customers of the existence** of this type of tool.

EEnvest tools could only be suggested/promoted to clients if they have obtained **validation from a higher authority** in the field of finance.

7.1.2 BUSINESS CASES 2 – BANK - VOLKSBANK

Volksbank, based in Bolzano (Italy), is present as a regional bank as well as on the South Tyrolean market of origin also in the North-East of Italy. There are 159 branches of Volksbank as a whole. The Bank (founded in 1886) now has about 60,000 members.

Volksbank claims to be the first Italian bank and the first regional bank in the world to have a public ESG rating from the S&P Global Ratings rating agency.

Decision making process for EEI

Volksbank has a sustainable development strategy, they have created internally two years ago a Innovation strategy group that pushing towards experimenting sustainable initiatives.

Volksbank has a sustainability strategy, they created an in-house *Innovation strategy group* two years ago that pushes to experiment with sustainability initiatives.

The Italian authorities are asking banks to disclose indicators on their investments.

For the moment there is no requirement from the authorities in terms of percentage of “green” projects, but this might change in the near future.

Financial – Technical – Multi-benefit risks

The bank has had a consultant developing a tool to enable assessing ESG levels (Volksbank is the owner of this tool). This tool collects data in the best case through questionnaires completed by the customer, or through the analysis of their public reporting and in the worst case by analyzing the keywords associated with the customer's name on the internet.

Perceived value of EEnvest tools

EEnvest tools are data driven. The EEnvest tools offer the possibility to make comparisons between projects.

They allow to comply with reporting systems like the EU Taxonomy.

EEnvest tools are useful for the clients of the bank.

Possible scenarios

The EEnvest tool could be plugged to the existing software ESG tool of Volksbank. Volksbank does not want to have tools similar to other banks, it will then be necessary to adapt/tailor the tools to its specificities.

These new functionalities based on EEnvest tools should be very simple to use because people who will use it are not energy experts.

The tools could be licensed with a fee per year and include maintenance or it could be the propriety of the bank after the tailored development.

Each bank may want to have its own tools with ponderation of some criteria and tailored aspect links to its identity.

7.1.3 BUSINESS CASES – SMALL ESCo – R2M SPAIN

R2M Solution Spain SL is an innovative ESCo that started operating as such in 2019 as a vehicle to fulfill R2M's main goal: "to bring innovation to the market".

During these years R2M energy service offer has been focused on providing turn-key solutions to support the deployment and uptake of energy communities in Spain. Such services include analysis and deployment of PV plants with and without storage, analysis of the legal and financial aspects of innovative energy sharing models, analysis of energy efficiency performance in building, exploitation of energy flexibility to provide power grid services, optimisation of multi-carrier energy flows in buildings and grids, modelling and simulation, etc.

These experiences have positioned R2M as a reference in Spain for providing a 360 turn-key consultancy for all types of actors and entities that wish to take control of their energy use.

Decision making process for EEI

R2M Solution Spain invests its own resources. As a start-up they seize opportunities: they invest either within PPA (Power Purchase Agreement) with small to medium investment envelopes or thanks to public tender. In both cases the risk is rather low.

Financial – Technical – Multi-benefit risks

They analyse mainly the financial situation of the actors involved.

Perceived value of EEnvest tools

Although they think the tool is well made, for a small company such as R2M Solution Spain - ESCo the value is not clear. Indeed, even if the cost of the tool itself is not so high, it requires a person capable of using it (learning, fulfilling the data for each project, and keeping up to date with the novelty of the tool).

The tools do not correspond to the mode of operation of a company which launches its activity in the field, and which develops initially thanks to its network.

Possible scenarios

Large ESCos might find this tool useful, but not small ones. In any case, it will be necessary to provide a back-to-back training offer for the proper handling of the tool.

7.1.4 BUSINESS CASES 4 – REAL ESTATE INVESTMENT FUND – PRELIOS SGR

Prelios SGR is the company of Prelios Group which is the asset management company, they manage asset portfolios on behalf of their customers (investment funds, each one targeting specific types of buildings or energy assets), while Prelios Integra (from the AB) is the company that evaluates the opportunities and obstacles carried by the renovation projects for those assets (basically engineering/project management). They work synergically with Prelios SGR to optimize the asset performance, value and revenues, as well as to avoid risk of stranded assets.

Decision making process for EEI

Prelios generally uses financial resources from the fund (which is the property owner), so there is not financial structure for the investment. This is standard for them, as the fund is owning the

structure and the installations/plants which are rented, then in case of sale it can retain the increased value.

The decision for EEI is well represented in the case of the Italian demonstration managed by Prelios. The investment was the first case in which energy efficiency targets have been included in the contract so that an increase of rental income had to be achieved. This is because the goal for the owner is to increase the rent, in correspondence of the cost savings achieved by the tenant after the improvement.

Cost savings (related to the fact that new systems/components require less effort for maintenance) and other co-benefits (comfort, productivity) that fall on the tenant can be used in similar contracts in the future if properly quantified.

Other drivers for the decision are the added value from the implementation of the energy conservation measures which allowed the tenant to get an updated LEED certification (the certification itself is a cost for the tenant, but it was mandatory for specific tenants).

Finally, the sustainability of the investment is of primary importance for the investment funds, and additional value is created when impacts can be reported from sustainable investments.

Financial – Technical – Multi-benefit risks

The analysis conducted by EEnvest partners is pretty in line with Prelios experience. It is very helpful to get foreseen investment performance and based on that identify which is the most suitable option among SCB (Separate Contracting Based) or EPC (Energy Performance Contracting) for a given project.

Perceived value of EEnvest tools

Value-at-risk analysis is an important feature that can make a difference to check the real impacts in the worst-case scenario. To define KPIs related to SDG/ESG is also important, as checking EU Taxonomy alignment is needed prerequisite but not enough. The PQSAT is a nice tool to grasp the quality of a project and to identify improvements to the weakest points.

Possible scenarios

Prelios is willing to include the analysis in their workflow and to become an user. Prelios manages portfolios up to 40 bln€ , and managing more than 10 mln m2. Prelios CEO will announce this cooperation at QI event in Sept 22.

Based on their demo case statistics (1.3 mln€ investment done on 44 000 m2), 4000 € /m2, which means IFAD building is 180 mln€ asset., they spent something around 1% of the asset value for a renovation. At a 3% yearly renovation rate, we therefore can estimate that they could spend something between 7-15 mln €/y for energy retrofits.

Prelios SGR is at the advisory board of EEnvest since the beginning of the project, they provided one pilot site in Italy and acknowledge the quality and usefulness of the EEnvest project results at the end of the 3 years project. They want to implement them on a portfolio of about 10 mln €/y EEI. This well-established pioneer user is a great opportunity to further test and validate the tools. Communication about Prelios SRG and Integra using the EEnvest tools

could have a important impact, particularly on the corresponding customer segment of the real estate investment funds.

7.1.5 FEEDBACK FROM PROJECT PROMOTERS – EPRA AND RICS EXPERTS

Interesting feedback was collected from EPRA (European Public Real Estate Association) and RICS (Real Estate company) during the 4th dissemination workshop hold the 7th of June, led

Key findings of the 4 business cases:

The future development of the platform will have to allow a **great interoperability** of the tools so that they are integrated with the already existing tools of the banks and the ESCOs (API, internal development).

In addition, in order to massively adopt the EEnvest tools and go beyond the Innovators user group, it will be necessary to have a **training offer** on the EEnvest tools.

The EEnvest tools would de-risk these projects at a cost. Based on our cost estimations and taking into account the fact that we are testing the tool and have a minimum number of customers for the moment, a reasonable market prices could be 5-to-10 000 €/y.

by UIPI and titled: EEnvest solutions for de-risking investments for renovation in the building sector: stakeholder reactions.

Jana Bour, EU Policy Manager at EPRA, expressed a great interest for the multi-benefits indicators, more particularly for the EU Taxonomy compliance KPI. She said that the market is facing not only a reporting issue, but an investment efficiency deficit because when the EU Taxonomy is not reported, huge incentives are not accessible. She commented that the EU Taxonomy criteria are currently evolving and acknowledge that EEnvest assesses the technical criteria (energy saving compliance) but not yet the ‘do not harm criteria’, which is something EEnvest consortium identifies as to be included in further developments to stick to the market needs created by this regulation not fully consolidated. Ms. Bour appreciated the standalone services approach proposed by the consortium, which increases the service modularity and allow adapting to the coming market evolutions and easy the adaptation to other types of assets such as the renewable energy infrastructures for instance. It keeps the replicability as high as possible. Ms. Bour wanted to know if the platform was accessible for users and, as an additional functionality, she proposed to use ex-post data as part of the benchmark.

Sander Scheurwater, Head of Public Affairs, Americas, Europe, Middle East & Africa (AEMEA) at RICS, insist on the need for project evaluation standardization and the increase in transparency and consistency of EEI evaluations. Mr. Scheurwater liked the CO₂ emission savings KPI and noticed that it includes only the operational carbon, not the embedded carbon. He said that embedded carbon is a trend coming, to be pushed forward in the next development of this KPI. He was also very much interested by the property evaluation on green certified assets and, commenting on the PQSAT, he insisted on the fact that for service providers in general, a self-assessment tool is very beneficial. He proposed include EEnvest information in its next newsletter, which is a very positive signal for further promotion and adoption of the tools.

8. EEnvest Tools SWOT and Recommendations

8.1 SWOT ANALYSIS

The elements composing the SWOT have been summarized in the table below:

Strengths	Weaknesses
<ul style="list-style-type: none">• Evaluation of risks including all aspects: financial, technical, sustainable development• Evaluation of risks based on data: objective and impartial• the EEnvest tools value is easily perceived by the actors• All EEnvest tools have not yet reached TRL9, this will allow their format to be adapted to the latest trends and market needs. Interoperable and standardized.	<ul style="list-style-type: none">• EEnvest tools are targeting a niche market of specialised tools with high quality risk analysis• EEnvest tools not yet recognised / validated by external major financial organisation as robust and trustable (unions, federations, governments...)• All EEnvest tools have not yet reached TRL9, those tools need extra investment (time) to be fully ready for commercialisation• To target larger market EEnvest tools need to further work on their user friendliness and training associated• Investment plan needed to further develop the tools is not yet fully defined
Opportunities	Threats
<ul style="list-style-type: none">• Rising uncertainty on cost of energy• Rising concern regarding ESG investment and reporting• EU Taxonomy for sustainable business will initiate the path towards multi-benefit analysis• At least half of existing residential and commercial buildings need deep, comprehensive renovations• The market searches for innovative business models to finance building renovation to accelerate the pace of renovation.• 2030 EU targets (40% GHG emissions reduction compared to 1990 levels, a minimum 32% of RE consumption share in the energy mix and a minimum 32.5% of energy savings²⁵)• carbon neutrality by 2050	<ul style="list-style-type: none">• In competition with tools dedicated to ESG and EU Taxonomy, less complete in terms of risk included but multi-domain and easy to use• Financial gap and perceived risk of EEI projects still too high, and investors looks only at lo-risks and conventional investments• EU Taxonomy could steer less ambitious/less expert/lower budget companies away from EEnvest tools.

²⁵ How to finance energy renovation of residential buildings: Review of current and emerging financing instruments in the EU

8.2 RECOMMENDATIONS

This chapter presents a set of recommendations resulting from the work carried out within the framework of this task on the definition of the business model and also more generally from all the work carried out within the framework of the project.

From innovators to the mass of users

Use the first "innovative" customers as Prelios SRG so that they become ambassadors of EEnvest tools and promote them in their circles. These first customers will begin to generate cash flow for EEnvest's business model. But pay attention to the needs and expectations expressed by this type of user, specialized and competent, who have very specific requests. To reach the mass market, you have to listen to broader needs. And already reached the importance of the user-friendliness of the tool and training support.

Compliance with latest regulations and standards

The EEnvest tools are not purely regulatory tools because at this stage they offer much more complete solutions. However, they must ensure that they are always compliant with the latest regulations and standards, and the form of reporting expected by them.

Approved by a major finance institution

To be more widely known and used, apart from the group of innovators who have taken the time to understand and validate the functioning and algorithm of the EEnvest tools, the tools would have to be recognized by major Financial Institutions at European or International level. Below examples of possible validation organisations, such as;

- European Investment Bank (Europe): <https://www.eib.org/en/index.htm>
- Climate Bonds (international) : <https://www.climatebonds.net/>
- Spainsif (spain): <https://www.spainsif.es/>
- S-Hub (Norway): <https://www.sustainabilityhub.no/>
- Global Reporting (international) : <https://www.globalreporting.org/>

CONCLUSION

Studies and analyses were carried out throughout the project to better orient the development of the business model of the innovative EEnvest tools. These studies were carried out on three levels: desktop research, collaborative work within the consortium and surveys and feedback from potential users.

This organized and sequential methodology made it possible to establish strong recommendations throughout the duration of the project and thus to guide technical development choices and market positioning as the development progressed. For example, the Project Quality Self-Assessment Tool carrying Desktop Due Diligence functionality was created to meet the very high need for verification of the data quality used to perform the risk analyses. Also, the exploitation plan was diversified during the last year moving from a unique focus on the EEnvest platform to a wider angle encompassing EEnvest results that can be more effectively used as autonomous tools in an ecosystem. This important step introduced more flexibility in the marketing communication and better matching to the reality of the market.

Although a complete business model of these EEnvest technological tools is yet to be determined, the work done allowed to mature all aspects of the business model canvas.

Regarding the '*Revenue Stream*' and '*Key Activities*' applying to the individual tools, we can already conclude that the most appropriate model for marketing is to link them to a consulting and training service offer, and to implement them in the existing tools of the customers to fit into their workflow. Especially since prospects have expressed their desire to have tools that are specific to them and not generic tools that could be the same as the competitor.

As for the '*Key Partners*', unanimously it appears that the EEnvest tools will have to be validated by key financial organisations that could recommend and prescribe them.

The '*Unique Value Proposition*' is to provide a multi-benefit high quality analysis of EEI at the opposite of greenwashing. One important point of the '*Customer Relationship*' is that the tools must be always updated with the new regulations and data.

Thanks to the work carried out in this task, we have a clear idea of the possibilities of the business model.

EEnvest results are adding important value recognized by all the market actors contacted and reached during the dissemination events. The consortium is in contact with pioneer users and there is a high chance of seeing EEnvest project results used by Prelios in the coming months. This step is the first of a series leading to EEnvest results market adoption.

Due to the evolving regulations and growing market, the challenges the consortium partners have to tackle is first to continuously adapt, improve the KPIs to make them fitting the new reporting needs and then to stay flexible in the way they will offer the services exploiting the project results and know-how accumulated during the 3 years of fruitful project.

Annex A Testing DEEP tool

To complete and deepen the benchmark, an in-depth test of the DEEP tool was carried out.

The content of the DEEP data for Spain has been tested within the framework of this benchmark. Among 96 projects, 5 have verified data, 11 unverified data and 80 have no verification level informed.

The figures are available for 7 types of measures:

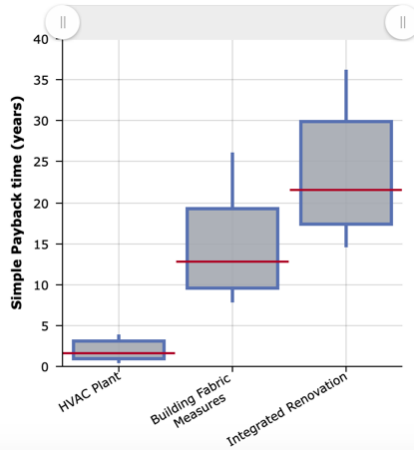
- Building products Measures
- Combination of Building products and HVAC
- Integrated Renovation
- Lighting
- HVAC Plant
- Ventilation and air conditioning
- Other

Not all Measure Types have data available.

In the “Building” part of the database (Industry part), the platform proposes 13 Building categories. As a test, we chose to select for the 28 countries, the building Type “Office buildings”, we got 264 projects. Selecting ‘Multi-family buildings 5+storeys’ shows 1,590 projects. There are 6,477 projects with a registered category out of 7,070 projects in total.

Selecting ‘28-EU’ and “Multi-family buildings 5+storeys’ display graphs showing “Distribution of payback time” and “Avoidance cost” (cost saving) by Measure Type (= ECM Type).

Distribution of payback time on 10%, 25%, 75% and 90th percentiles - Measure types



Avoidance cost per measure on 10%, 25%, 75% and 90th percentiles (Eurocent/kWh)

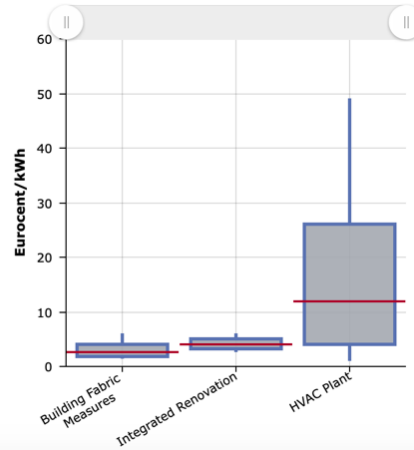
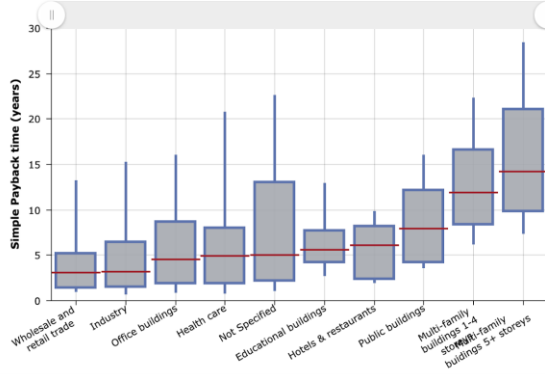


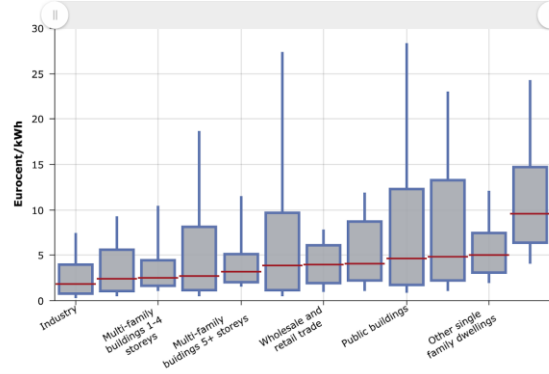
Figure 14 – DEEP, Charts Viewer, report page, charts are filled if data is available.

After selecting '28-EU', one can also decide to select a Measure Type as “Integrated Renovation” and unselect the Building Type, in that case the graph shows “Distribution of payback time”, “Avoidance cost” (cost saving) by Building Type, “Annual Energy Savings Distribution” (distribution per measure type) and “Annual Energy Savings Distribution” (distribution per building type).

Distribution of payback time on 10%, 25%, 75% and 90th percentiles - Building types



Avoidance cost per building type on 10%, 25%, 75% and 90th percentiles - (Eurocent/kWh)



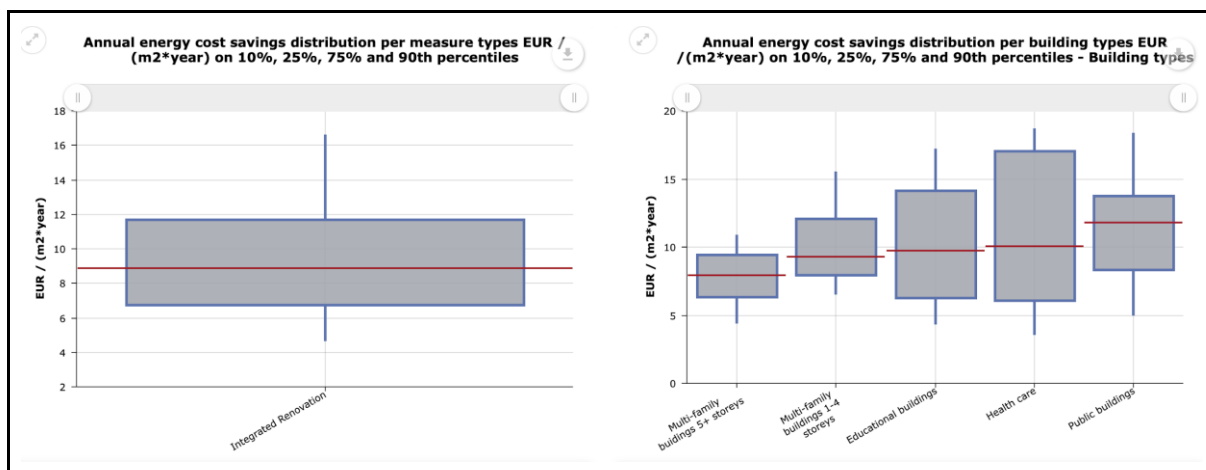


Figure 15 – DEEP, Charts Viewer, Selection = '28-EU' + “Integrated Renovation”

In DEEP, project data can be uploaded using the “Add and manage project” interface for verification and/or immediate benchmarking against DEEP data. Benchmarking graphs are shown in the “Benchmark your projects” interface. What DEEP means by “verification” remains quite unclear. There is no mention of ICP and IREE certification or similar process.

The “Analysis Toolbox” interface allows creating customized filtered data graph from DEEP database.

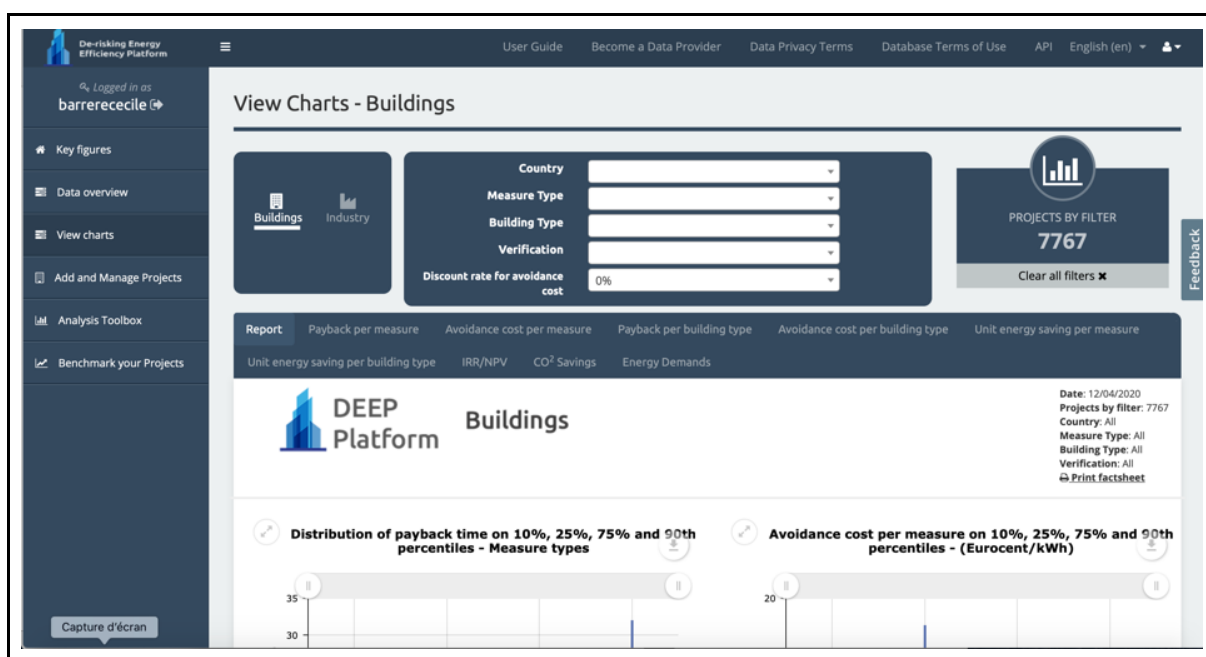


Figure 13 – DEEP, Data Viewer. (96 projects in Spain, 24 projects in Italy)

Annex B SEO analysis

An SEO (search engine optimization) market study is a small keyword study in which we scan the main keywords in a sector and their associated search volume.

This study has been made for the French market in October 2020 as a representative case of the trends in France, Italy and Spain using Insight Yooda²⁶ (a major SEO tool in France) for the following keywords:

- Energy renovation
- Building due diligence
- Real estate due diligence
- Responsible due diligence
- Real estate investment risk
- Tertiary promoter

Table 2. SEO key words study results

Keyword FR	Keyword translation	Nb research /month	Volume of results FR
Rénovation énergétique	Energy renovation	1,600	25,200,000
Due diligence bâtiment	Building Due diligence	Not referenced in the database	
Due diligence immobilier	Real estate due diligence	50	536,000
Due diligence responsable	Responsible due diligence	Not referenced in the database	
Risque investissement immobilier	Real estate investment risk	40	12,100,000
Promoteur tertiaire	Tertiary developer	20	475,000

This SEO study reveals that the searches carried out in the field of interest of EEnvest on the search engines are very low. Indeed, the market of the EEnvest platform is what we call a niche market. A niche market is a narrow market, which benefits from barriers to entry and in which companies are relatively protected from competition. The niche market as well as the B2B market explains the low search volume on search engines. Therefore, advertising on search engines is not be relevant. This aspect is very important to have in mind while developing the commercialisation and communication strategy. The importance of the marketing strategy and communication is very high for niche market.

Being in a niche market has significant advantages:

- One of the benefits of a niche market is having little or no competition. When you have a highly specific product or service, there is less companies out there with the exact same offering, and more barriers at the entry. EEnvest team could be seen as an expert

²⁶ <https://insight.yooda.com/>

in the sector, able to provide additional consultancy and deal with both technical and financial aspects. This could attract more interest.

- Niche markets required less marketing and advertising expenses to get to the potential client and to “keep” them on the platform (requires less expense but remains a very important task and needs to be configured very finely at the risk of missing target customers).

The main disadvantage of a niche market is that it has a limited total number of possible users.

During the 3rd project meeting in May 2020, R2M Solution organized a workshop on the EEnvest segmentation and value proposition using the whiteboard online tool MIRO. The boards presented in Figure 19 were prepared prior to the workshop based on information collected during bilateral interviews with the members of the consortium.

