

# De-Risking Energy Efficiency Investments through Innovation <sup>†</sup>

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† Presented at the Sustainable Places 2020, Online, 28–30 October 2020.

Published: 23 December 2020

**Abstract:** Three Horizon 2020 projects, EEnvest, Triple-A and QUEST, are exploring innovative approaches to de-risking energy efficiency investments, focusing on how to render those investments attractive to the financial sector. EEnvest aims to develop a platform in order to contribute to the risk reduction for building energy efficiency investments, Triple-A focuses on enhancing at an early stage the investment value chain of energy efficiency projects and, finally, QUEST wants to improve the quality of management investments in energy efficiency.

**Keywords:** energy efficiency; de-risking; investments; building sector

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## 1. Introduction

Energy efficiency is not yet considered as an attractive investment by the financial sector, which limits the possibility to use external private finance on top of equity of project owners and available public funding. The lack of statistical data on the actual energy and costs savings achieved by energy efficiency investment projects, as well as on payment default rates, results in financial institutions attributing high-risk premiums to energy efficiency investments. Whereas energy efficiency investments are usually expected to be paid back exclusively through the reduction of the energy bill, there is increasing evidence that non-energy benefits play a key role in the decision to invest in energy efficiency. This includes, for instance, increased building value, lower tenant turnover, vacancy rates etc.

EEnvest, Triple-A and QUEST projects are developing innovative solutions to tackle the above challenges, and they joined forces on a common workshop organized within the framework of the conference Sustainable Places 2020 to expose their approach and discuss potential synergies (Supplementary Materials).

## 2. EEnvest De-Risks Energy Efficiency

EEnvest [1] is developing a platform that will reduce the associated risk in Energy Efficiency Building Investments, allowing investors and building owners to evaluate the risk of their investments.

The EEnvest consortium represents a multi-disciplinary group composed of nine partners, representing five EU countries, including research institutions, financial and consulting companies,

technical developers and organizations involved with the civil society; thus, it is an ideal platform to carry out the work proposed. In addition to the EEnvest Partners, the project counts with the back-up of an Advisory Board composed of professionals from the financial and technical fields, and a supportive Stakeholder community, who are part of the impact maximization structure. EEnvest has received the support of 37 actors, including banks, ESCOs, energy agencies, real-estate owners and certification bodies, among others.

The project aim is to build evaluation models related to energy efficiency investments that can have an economic impact on the return investment and payback of building renovation actions. It has a focus on commercial buildings, and in particular on office buildings, but the project is developing an evaluation framework that can be replicated in other types of buildings and uses.

### 2.1. Risk Reduction

As said before, EEnvest is developing effective evaluation methods for the technical/financial risk correlation by categorizing a number of major technical risks and quantifying their impact on investors' confidence.

Those risks will follow three main phases:

1. Evaluation of the exploitation of existing databases on energy efficiency of buildings.
2. Organization on an investor-friendly benchmark track record.
3. Transfer to a web-based platform through secure blockchain networks, in order to guarantee that the information is validated and reliable and to ensure the quality and security of the data at the end of the process.

In order to reduce the risk in investments, the project is based on three main pillars, as seen in Figure 1.

- **Technical risk evaluation:** provide a structure framework to evaluate the risk of energy-efficient renovation of buildings, starting from the risk identification and then quantifying the impacts on energy performance and defining some mitigation measures.
- **Financial risk evaluation:** the technical performance indicator will be translated into financial risk KPIs.
- **Technical/Financial due diligence:** deliver a comprehensive technical–financial due diligence framework that both investors and technical consultants as well as building owners can apply to evaluate energy efficiency investments for the renovation of buildings.

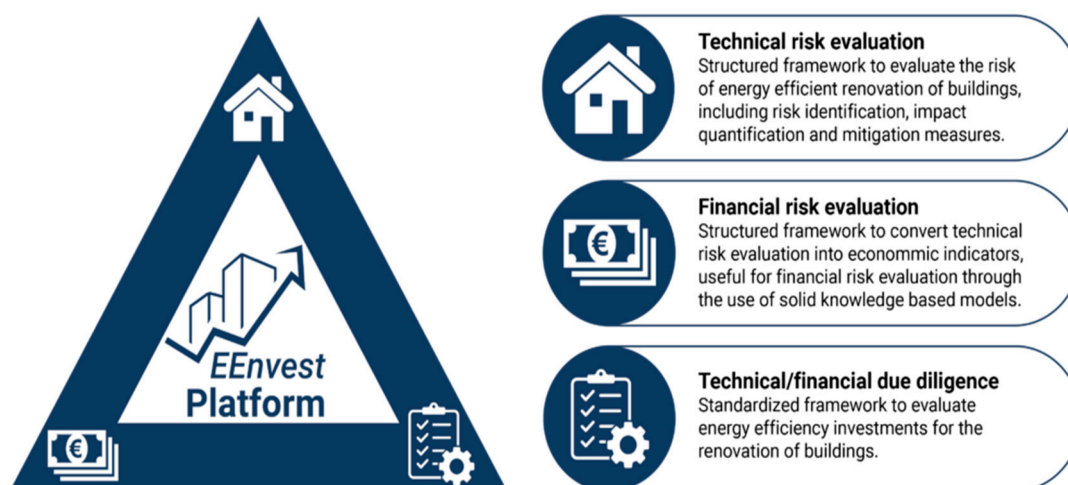


Figure 1. EEnvest platform.

## 2.2. Results

There are three main results for this project:

1. Risk rating models for building energy efficiency solutions.
2. A systematic technical/financial due diligence framework for energy-efficient building renovation; the project will be based on commercial buildings but will also be validated on residential buildings.
3. An investment evaluation platform that is web-based and which would also include a benchmarking tool. The project is in the course of completing the due diligence framework and developing the platform.

## 2.3. Platform Objectives

To conclude, the EInvest evaluation platform goals are to create a user-friendly online platform to promote investments in energy efficiency building retrofits, which acts as a marketplace connecting building owners with potential retrofit investors, using a complex risk probability calculation model that simplifies the assessment of potential outcomes for both sides, and always operating in a secure information technology environment that ensures data integrity.

## 3. Triple-A: Enhancing at an Early Stage the Investment Value Chain of Energy Efficiency Projects

Triple-A [2]—Enhancing at an Early Stage the Investment Value Chain of Energy Efficiency Projects is a Horizon 2020 project with a practical result-oriented approach. It seeks to identify which energy efficiency investments could be considered as Triple-A investments by fostering sustainable growth, while also having an extremely strong capacity to meet their commitments, already from the first stages of investment generation and preselection/pre-evaluation.

Triple-A was initiated in September 2019 with the support of the European Union's Horizon 2020 Research and Innovation Programme, and it will last 2.5 years. The Triple-A consortium consists of 12 institutions all over Europe, including financing bodies, project developers, policy support and research institutes.

Triple-A aims to identify and mainstream energy efficiency investments focusing on the pre-screening process, where no standardization procedures exist yet. To this end, Triple-A creates standardized tools and benchmarks in order to support the identification of attractive project ideas.

The “gap” that the Triple-A scheme tries to cover concerns the development phase of energy efficiency investments, where plenty of project ideas exist. These projects, however, tend to never get financed for various reasons, either because project developers do not have the expertise or resources to make a convincing financing case for investors or because most of the banking sector does not adopt energy-efficiency-based criteria for financing project ideas.

Triple-A, therefore, adopted a very practical result-oriented approach, seeking to address this challenge by answering the following questions:

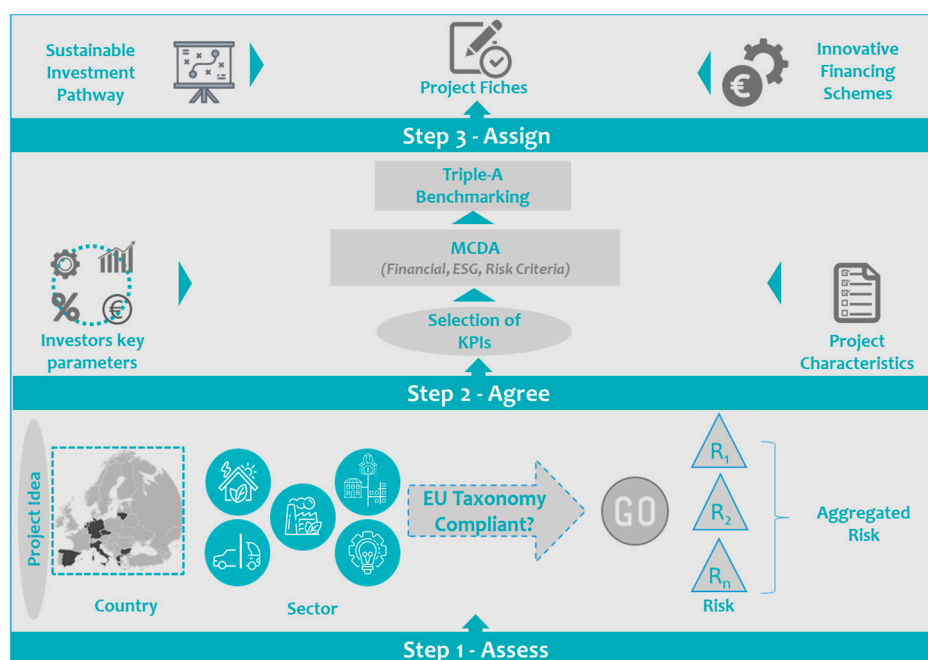
- How do we **assess** the financing instruments and risks at an early stage?
- How do we **agree** on the Triple-A investments, based on selected key performance indicators?
- How do we **assign** the identified investment ideas with possible financing schemes?

The Triple-A scheme is comprised of three steps, Assess–Agree–Assign (Figure 2), answering each of the abovementioned questions, with the following main outputs:

**Step 1–Assess** the results in member states' risk profiles and mitigation policies, including a web-based database that enables comparability per member state and sector, identification of market maturity, exchange of experiences regarding good practices among member states and facilitation of the replicability, leading to a fruitful policy analysis for scaling up energy efficiency investments and reducing uncertainty for investors/financiers. A complete risk assessment of projects and the incorporation of EU taxonomy eligibility criteria are the main pillars of the Assess step.

**Step 2–Agree** results in standardized Triple-A Tools and Benchmarks with guidelines translated into all languages of the consortium partners, templates and procedures, accelerating and scaling up private Triple-A investments in energy efficiency.

**Step 3–Assign** results in in-country demonstrations, replicability and overall exploitation, including recommendations on what energy efficiency investments are realistic and feasible in the national and sectoral context, as well as on how they could be financed in practice in the short or medium term. Recommendations on realistic and feasible investments are foreseen in the national and sectoral context, as well as for short- and medium-term financing.



**Figure 2.** Triple-A methodology.

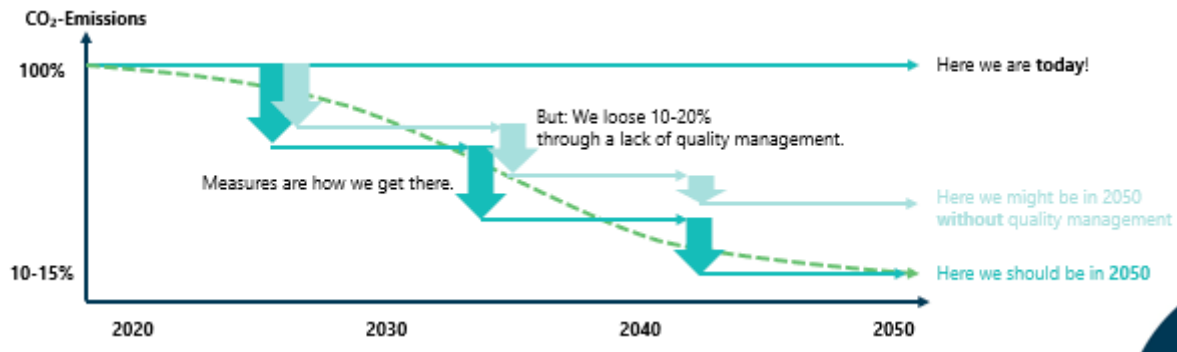
Triple-A methodology and standardized tools create effective links and exploit information and outcomes from relevant energy efficiency platforms, in order to create a synergistic ecosystem. The De-Risking Energy Efficiency Platform (DEEP) has been efficiently bridged with Triple-A, by the harmonization of key performance indicators and the utilization of data statistics for the development of the standardized Triple-A tools. In addition to the Triple-A tools, a Triple-A Interactive Web-based Database [3] is available, providing interactive maps and graphs that display the results of the Triple-A risks assessment on energy efficiency investments in several European countries.

Draft versions of the standardized Triple-A tools are available online [4]. The tools target project developers, bankers and financiers, enabling them to check the European Union taxonomy compliance, assess the total risk and benchmark the estimated performance of energy efficiency projects. The tools could be used not only to evaluate projects, but also to receive a suggested portfolio of already-benchmarked Triple-A projects, parameterized to the user’s needs.

Triple-A investments are being identified in the following eight case study countries: Bulgaria, Czech Republic, Germany, Greece, Italy, Lithuania, Spain and the Netherlands. The case studies were strategically selected to promote diversity considering economic conditions, the progress on energy challenges, the geographical location and the regional role.

#### 4. QUEST: 2050—De-Risking Your Investments into a Carbon Neutral Building Portfolio

QUEST [5] is developing a reliable empiric database on the economic and ecologic impact of measures to reduce the CO<sub>2</sub> emissions of buildings. Owners can use this information to apply the most effective measures and best quality management services to achieve maximum impact on their portfolio, as can be seen in Figure 3.



**Figure 3.** Quality management service: the key to meet ESG goals in the building sector.

The European Green Deal and taxonomy will cause heavy investments in innovative technology at a high speed and large scale. Choosing the right measures for retrofit or modernization and the appropriate quality management services such as Digital Technical Monitoring or expert-based commissioning are key to ensure that portfolios adhere to the EU Green Deal while maintaining economic performance. Thus, QUEST de-risks financial investments in projects focusing on fighting climate change in the European building stock.

### 5. Conclusions

To conclude, it is interesting to mention the importance of the synergies created between the above projects in order to achieve the objectives planned by the European Union for 2030. The next plans for the MFF (multi-annual financing framework) are focused in the area of sustainable finance. The legal framework that would lead the European strategy is based on the European Green Deal and on the European Renovation Wave. The objective is to renovate 35 million buildings, focusing on energy renovation and moreover, on deep renovation (integration of the building to the grid, smart building parameters, etc.).

According to the proposed European Renovation Wave [6], the seven general guiding principles are:

1. Set the legal framework: strengthen information, exchange certainty and provide incentives from public and private owners and tenants to undertake renovation.
2. Ensure adequate and well-targeted financing, for public and private funding.
3. Increase the capacity of developers and investors to develop projects.
4. Improve the quality of renovation, focusing on deep renovation: integration of renewable energy systems, integration of the buildings in the energy system etc.
5. Make the construction echo ecosystem more sustainable, looking at circular solutions.
6. Use a social parameter, using renovation as a lever to address energy poverty.
7. Decarbonize the heating and cooling of buildings, which account for 80% of emissions.

The challenge of investing in energy-efficient buildings is the fact that public grants are not enough in volume; in addition, they require the mobilization of the private sector and a sustainable investment flow over time. Those challenges are very well-defined in the context of the projects mentioned above, and it is necessary to overcome all these complexities and incentivize investment in sustainable projects.

There is growing evidence of the multiple benefits generated by sustainable energy projects, and while this could significantly influence the decision making of private investors, it should be accelerated.

How do we plan to tackle all these challenges? We need to approach sustainable finance from different perspectives:

- Mainstreaming and de-risking sustainable finance through the introduction of new tools (green bonds, securitization of assets and decision making and benchmarking tools), the exploration of the impact of risk ratings, aggregation of market practices, simplification of the investment

project, development of cost-effective quality management services and activities focusing on data provided from energy performance certificates, smart meters and the development of digital solutions, among others.

- Innovative sustainable finance through the development of different financing instruments, focusing on deep renovation, reinforcing the local supply chain, developing criteria standards in the area of sustainable finance, giving support to regulatory bodies and supervisory authorities etc.

**Supplementary Materials:** A recording of the workshop is available online at <https://www.sustainableplaces.eu/home/sp20-workshops-events/sp20-de-risking-energy-efficiency-investments-workshop/>.

**Author Contributions:** Introduction: R.D.; presentation of EEnvest: A.A.; presentation of Triple-A: C.K.; presentation of QUEST: S.P.; conclusions, A.A.; assembly, structure, format and edit of the paper: T.L. and M.G. All authors have read and agreed to the published version of the manuscript.

**Funding:** The projects EEnvest, Triple-A and QUEST have received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement numbers 833112, 846569 and 846739, respectively.

**Conflicts of Interest:** The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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