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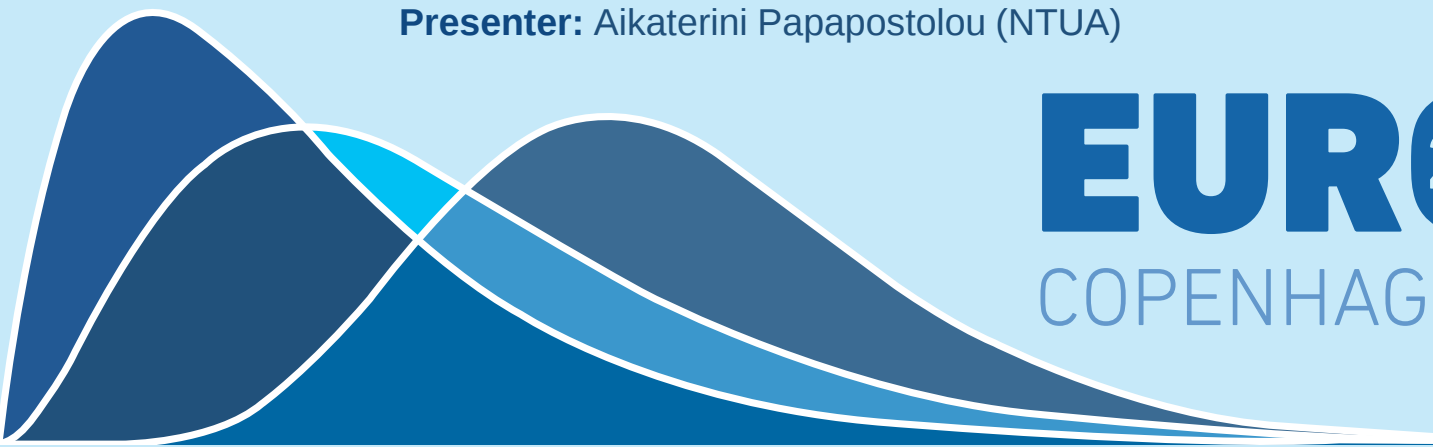


Title: Utilising decision – making methods and online tools to accelerate sustainable renovation investments: insights from a stakeholder engagement approach

Authors: Aikaterini Papapostolou, Ioanna Andreoulaki, Vasilis Kotrogiannis, Vangelis Marinakis

Decision Support Systems Laboratory, School of Electrical & Computer Engineering, National Technical University of Athens, Greece

Presenter: Aikaterini Papapostolou (NTUA)

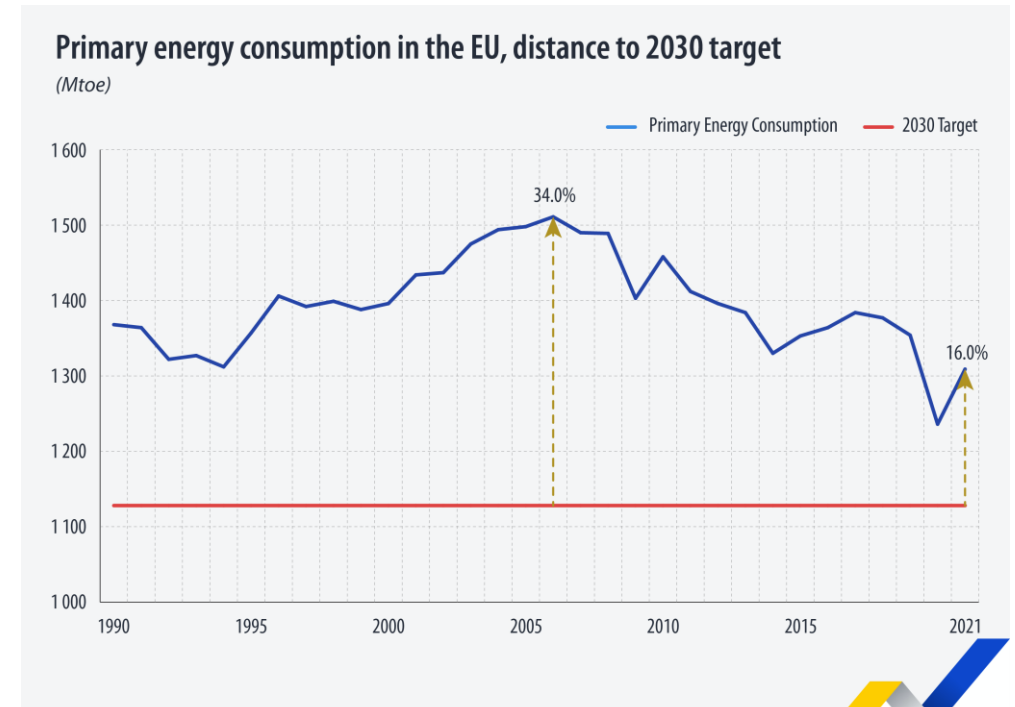
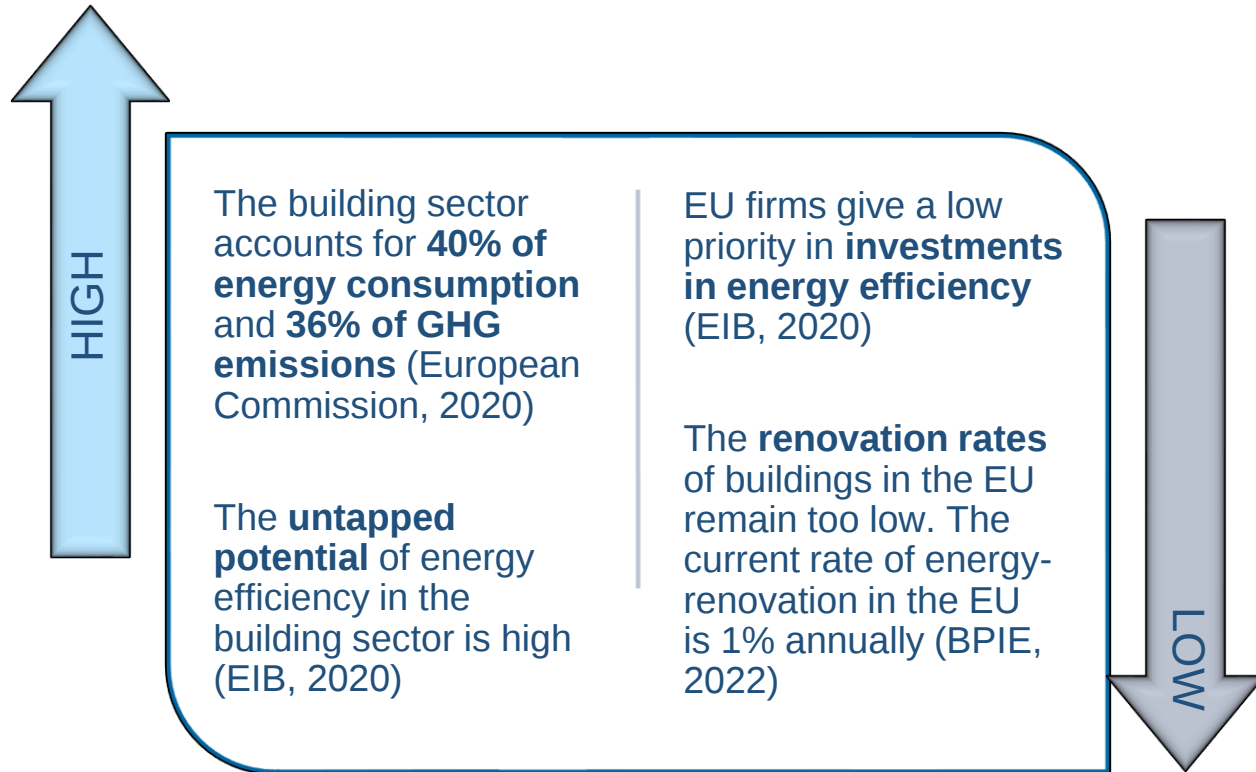


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Background (1/2)



eurostat

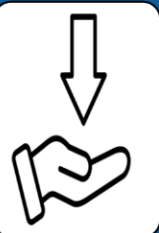
Source: Eurostat, 2022

Background (2/2)

Building side

VS

Financial side



Needs

- Access to finance
- Technical expertise
- Simplified processes



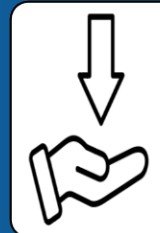
Interests

- Energy and cost savings
- Property value enhancement
- Enhanced Comfort and Indoor Environment Quality



Barriers

- High upfront costs
- Complexity of procedures
- Lack of awareness and information



Needs

- Reliable data on EE projects
- Large financeable packages
- Project evaluation and risk assessment



Interests

- Investment Security
- Sustainable Investment Opportunities
- Portfolio Diversification



Barriers

- Perceived Risks
- Lack of Standardised Procedures
- Uncertain or weak economic environment





Smart energy marketplace for sustainable investments

January 2023 – December 2025

The ENERGATE Project (1/2)

The ENERGATE vision

Enable easy, predictable and risk-weighted renovation investments

Project Partners:



Project development of retrofitting actions



Access to sustainable finance for renovation projects



Business matchmaking in a user-friendly ICT-enabled platform



Co-funded by the European Union under project ID101076349. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.



The ENERGATE Project (2/2)



Project development

A large standardized project development facility for EE project sponsors and owners or private or public entities



Aggregation

An aggregation, due diligence, and cash flow enhancement process, where projects and measures shall be packaged and enhanced appropriately, to be offered to financiers

Feedback loops

Appropriate feedback loops that will measure the impact of the ENERGATE platform, i. e. by means of suitable M&V processes.



Business matchmaking

Providing added value services to all of its users, by enabling business matchmaking, quality assessments and user profiling and generally facilitate data and information exchange.



Scope of the study

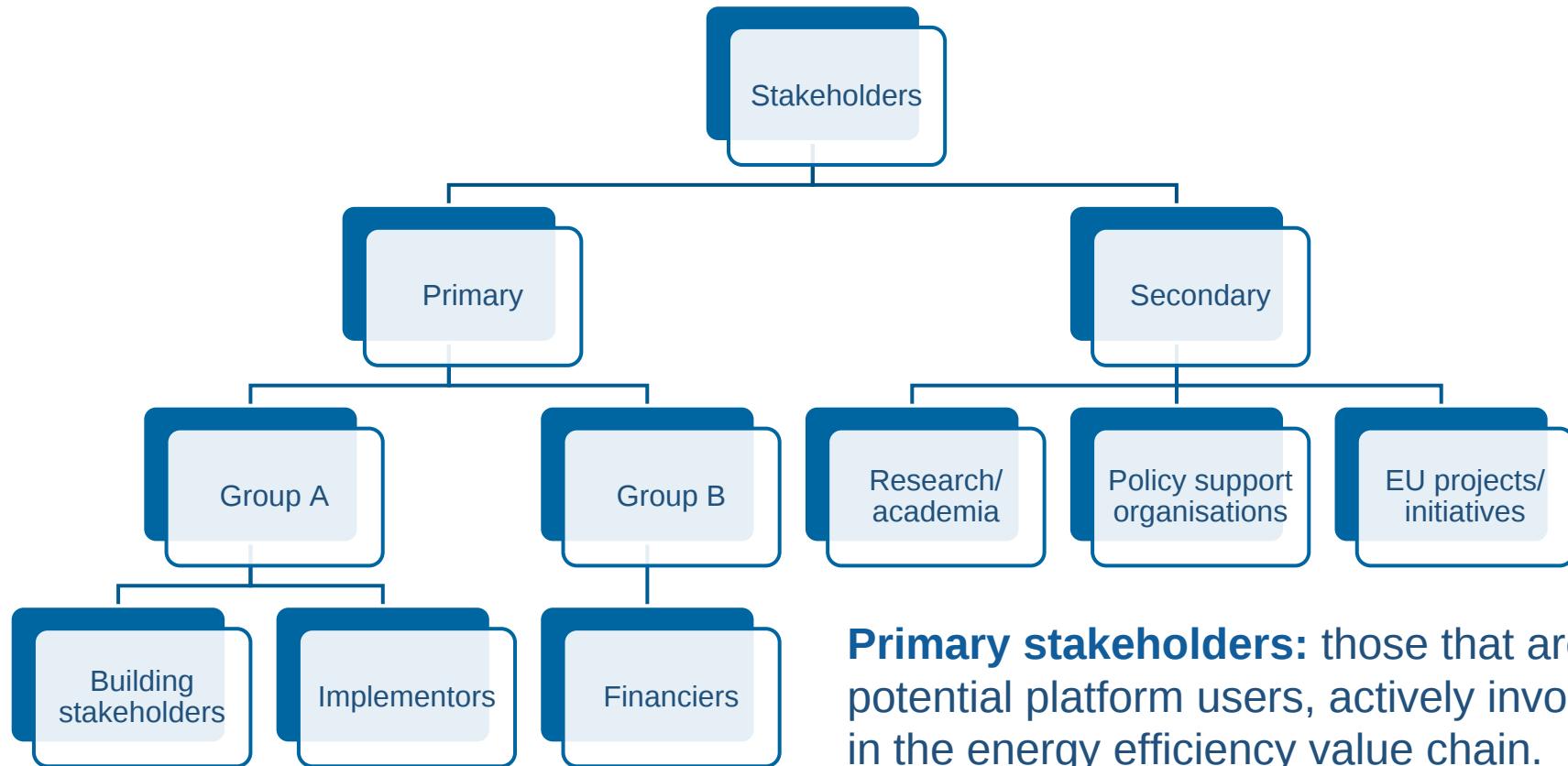
Application of a stakeholder consultation approach in order to...



Methodological approach



Stakeholder mapping: Identification & Categorisation (1/2)



Primary stakeholders: those that are potential platform users, actively involved in the energy efficiency value chain.

Secondary stakeholders: indirect impact and more remote interest.

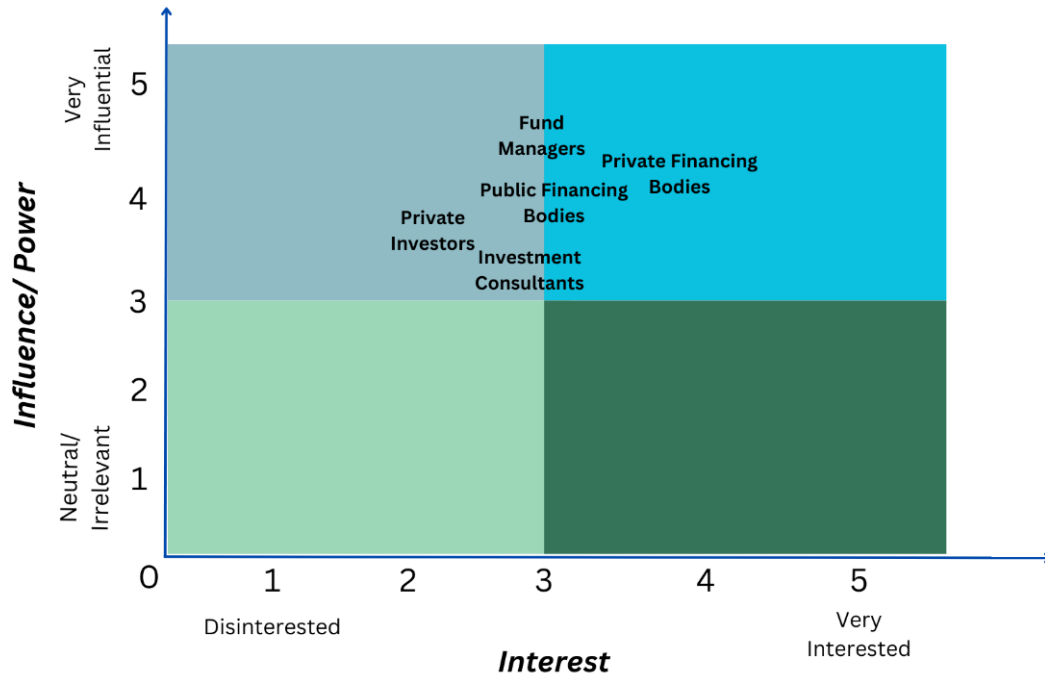
Stakeholder mapping: Identification & Categorisation (2/2)

Primary: Supply-Side (Building) Stakeholder	
Energy Service Companies (ESCOs)	• Screen for new investment opportunities • Learn from case studies • Provide data from their own services.
Project Developers	• Learn about the different financing methods for their projects. • Find funding entities interested in their projects.
Building owners	• Find funding entities in one single place. • Study other funded projects to improve their own application.
Asset Managers	• Learn about funding opportunities • Better choose which funding entities to approach.

Primary: Demand-Side (Financial) Stakeholder	
Private financing Bodies	• Learn from similar cases • Reduce uncertainty and better estimate return.
Public Financing Bodies	• Learn from similar cases and support decision-making.
Fund Managers	• Gaining information on risk assessment or return estimation. • Screen for new investment opportunities.
Investment Consultants	• Screen for new investment opportunities • Better decide which types of projects are of interest to their clients.
Private Investors	• Standardised information in digestible formats • Easier for to find interesting opportunities.

Secondary stakeholders	
Policy makers	• Get an overview of the market, • Adjusting future policies to the needs of all stakeholders.
Policy support organisations/ NGOs	• Access accurate and centralized information on funded EE projects • Learn from case studies to improve their own work
Researchers and academia	• Reap advantages from the spillover effects of data science results. • Leverage the outcomes of data science activities to further their own research initiatives. • Decision support and multicriteria assessment techniques
Media	• Help increase public awareness, promote the marketplace, provide valuable feedback.
Other EU projects & initiatives	• Reap the advantages of the spillover effects of data science and building financing research outcomes that they can use to further build their own work on.

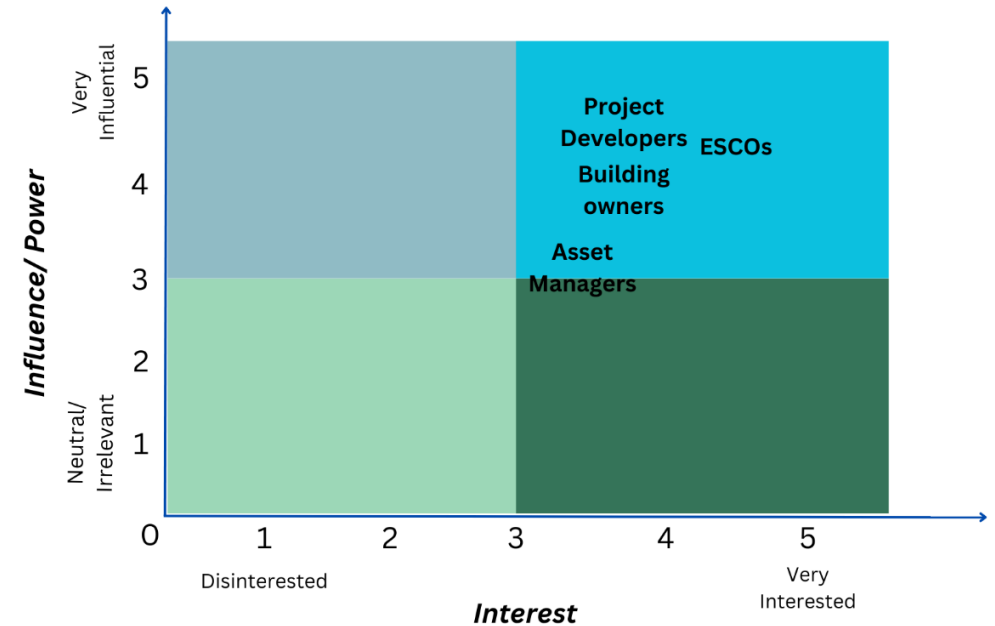
Stakeholder mapping: Prioritisation



Private investors: lowest interest – be the most wide-spread and varied group with strong varying priorities

Fund managers: Medium interest - often only be interested in larger projects

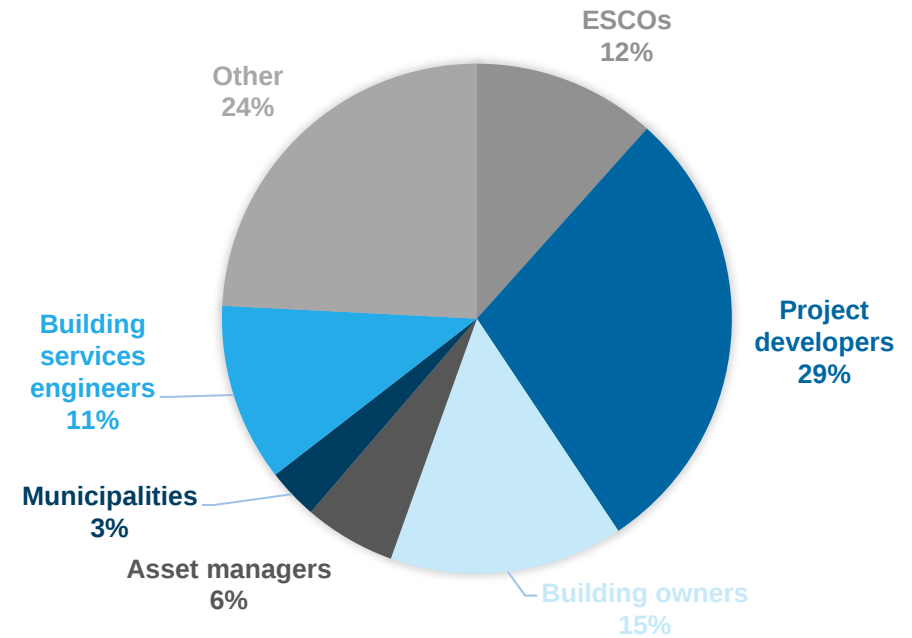
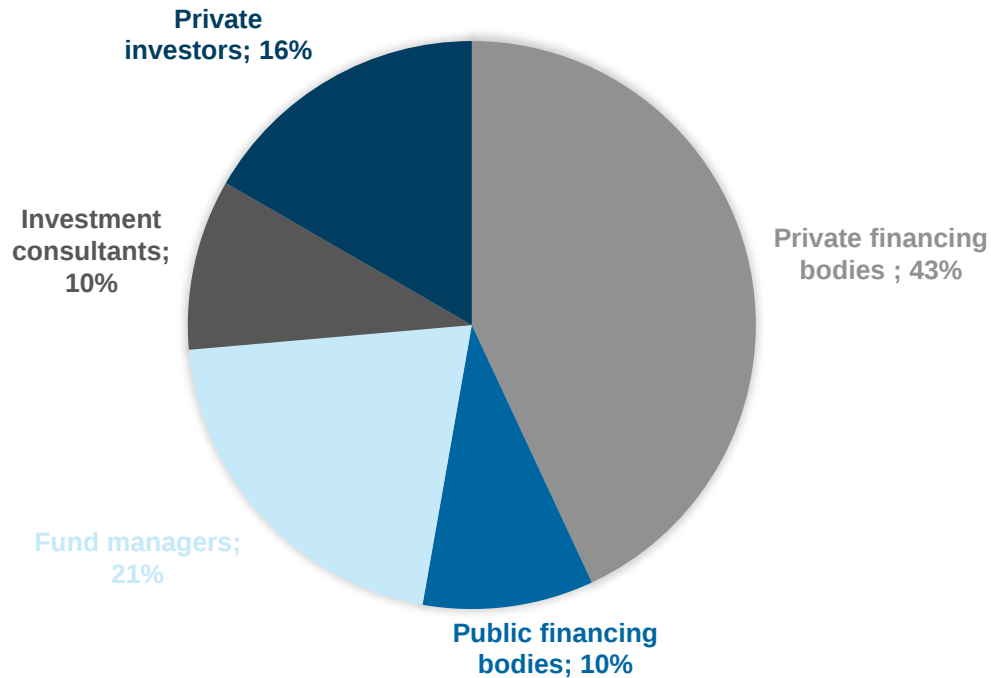
Private financing bodies: High power & interest. Examine building projects with a variety of financing methods. Often aim for a more varied portfolio approach



ESCOs: interested in exploring different financing methods that are available to make these solutions feasible

Project developers: one of their biggest barriers often are related to the financing of the solutions.

Stakeholder mapping: Estimated outreach



- Survey distributed to ENERGATE project partners to identify stakeholder outreach
- Estimated outreach of 382 primary stakeholders
- We identified that apart from 2 main groups: Building & financing side, we need to have a separate use case for the implementors

Engagement plan

1st step

Collection of input
and discussion with
the ENERGATE
“pilots”

2nd step

Preparation of
consultation
training material

3rd step

Regional training
workshops

Short surveys and
extended surveys

Semi-structured
interviews

Engagement plan: input from pilots

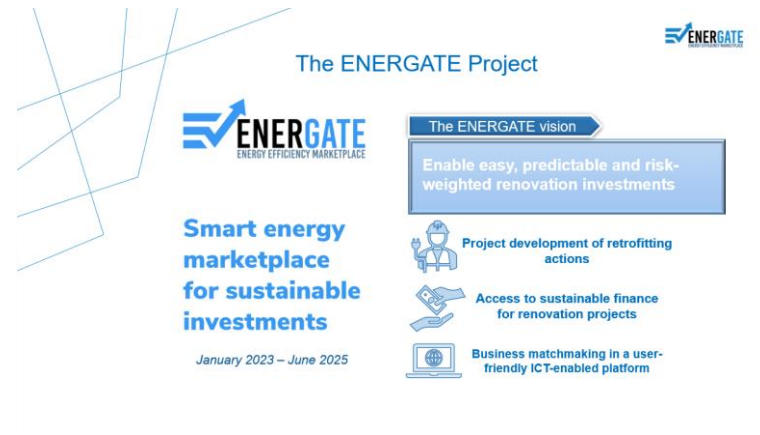
USER TYPE #___	
As a XXX (Role = user type/ brief description), I want to XXX (Action / Task extracted from the goals and pains) so that XXX (benefit from the marketplace results)	
USER	USER CONTEXT
 <i>Target Group: Group _ (A or B)</i> <i>Sub-target group:</i>	<i>Add a description of the context of the Persona</i>
PAIN POINTS	GOALS
<i>What current pain points will the marketplace solve?</i>	<i>How can the marketplace help to achieve the goals?</i>
USEFULNESS OF THE PLATFORM	ATTITUDES & SENTIMENTS
<i>How does the marketplace fit into the needs of the user?</i>	<i>What emotions will the marketplace create?</i>

- ✓ The 5 “pilots” are organisations participating in the project, representing different market actors involved in energy efficiency projects and investments.
- ✓ Significant pain points (lengthy processes, lack of standardisation, lack of attractive investment packages, overwhelming datasets, stress to find finance) have been identified
- ✓ The collection of input from the pilots enabled the initial design of the ENERGATE marketplace

1st step

Collection of input and discussion with the ENERGATE pilots

Engagement plan: training material



Presentation: overview of the ENERGATE project



Short description of the project



Initial user interface & videos



Dissemination material (e. g. brochure)

2nd step
Preparation of
consultation training
material

Quantitative and qualitative approaches



Regional training workshops



Surveys and semi-structured interviews

- ✓ **2** regional training workshops in Madrid, Spain and Riga, Latvia: **72** participants in total
- ✓ Surveys to gather more detailed feedback from the stakeholders: **78** respondents
- ✓ Bilateral and multilateral calls to have direct communication with key stakeholders: **44** stakeholders involved

3rd step
Stakeholder
consultation activities

Analysis of feedback: training workshops

Regional Training Workshops - key takeaways:

- ✓ Financiers wish to invest in assets that have a plan to improve their performance and maintain it in the future
- ✓ Investors are **reluctant to disclose data**
- ✓ Guidance related to ESG metrics is necessary
- ✓ Quantification of **risks** is of vital importance
- ✓ There is **very limited experience** when it comes to private funding in energy efficiency projects in public buildings
- ✓ There are numerous **legislative barriers** and bureaucratic procedures that slow down the process in the public sector
- ✓ **Bundling** energy efficiency projects in public buildings is **not a common practice** although it would be very promising

Driving Energy Efficiency in Public Buildings

A Focus on Financing, Incentives, and Effective Tools



May 29 | 14:30 (EEST)



Riga, Latvia

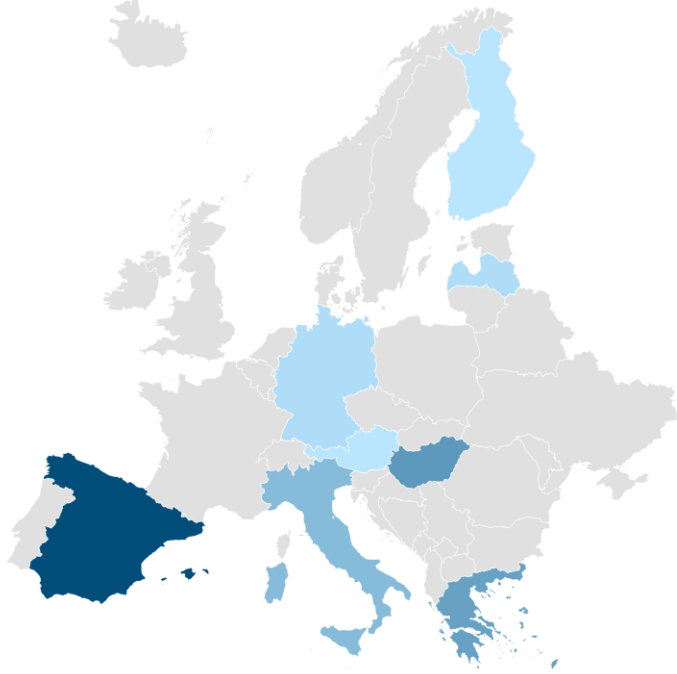
TRAINING WORKSHOP

Financing and implementing Energy Efficiency

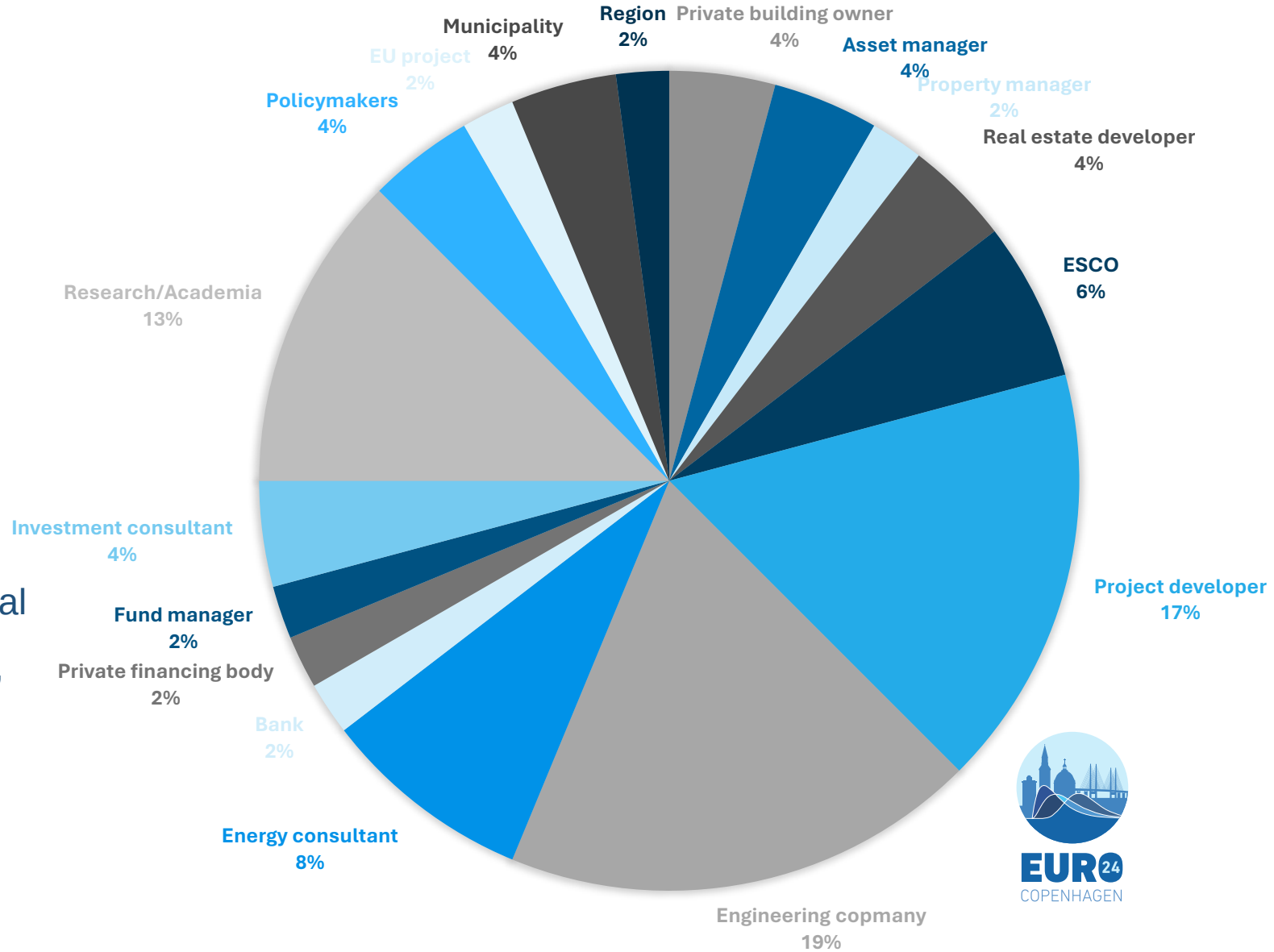
28 SEP.
2023
18.00

Valle Inclán room
Círculo de Bellas Artes
Alcalá, 42
28014 Madrid

Analysis of feedback: stakeholder consultation survey (1/5)



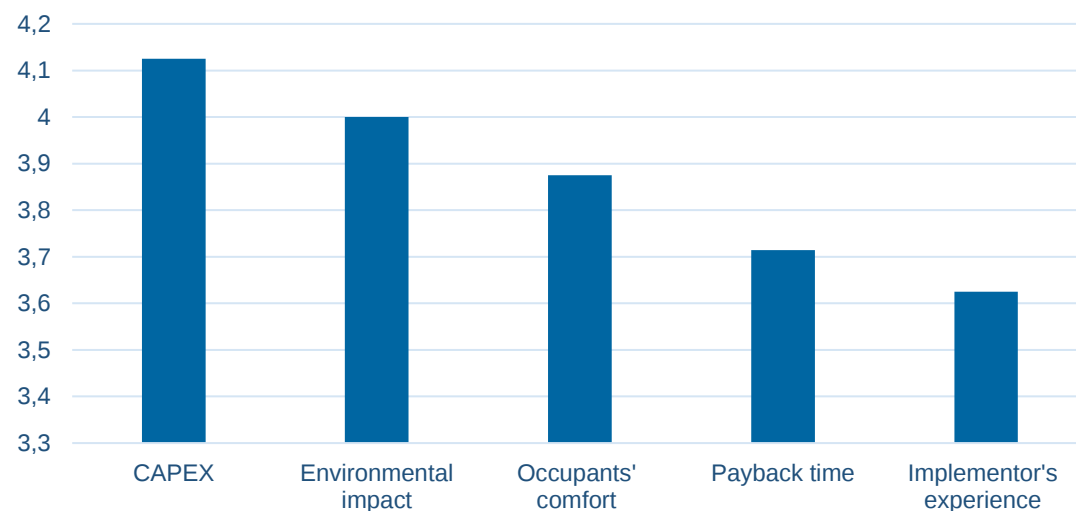
- ✓ 78 responses in **surveys** in total
- ✓ Wide **variety of stakeholders**, both primary and secondary
- ✓ Respondents from various **European countries**



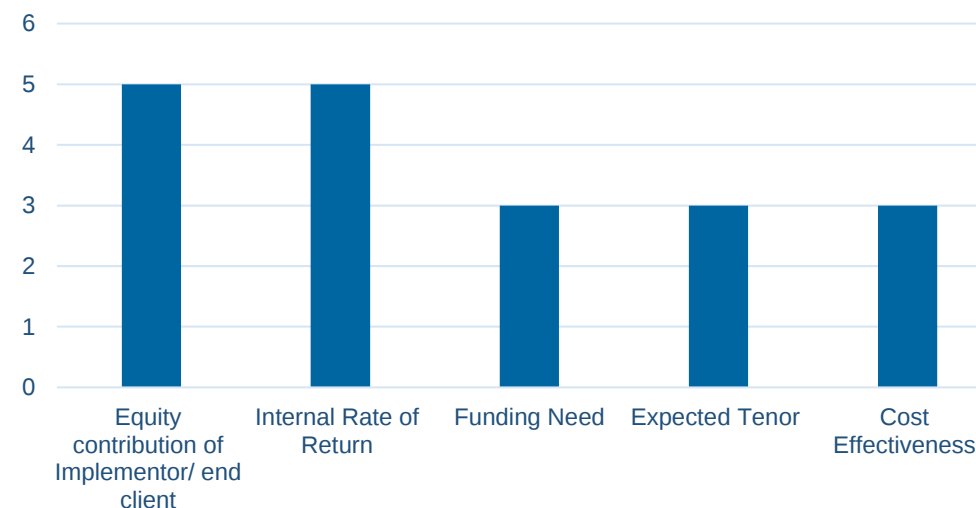
Analysis of feedback: stakeholder consultation survey (2/5)

What are the key factors considered to evaluate an energy efficiency project?

Importance of indicators (building stakeholders)



Importance of indicators (financiers)



- ✓ The different sides have different priorities
- ✓ This highlights the communication gap and different perspectives of stakeholders
- ✓ It is possible to automate the assessment of projects based on different KPIs using multicriteria methods and ML techniques

Analysis of feedback: stakeholder consultation survey (3/5)

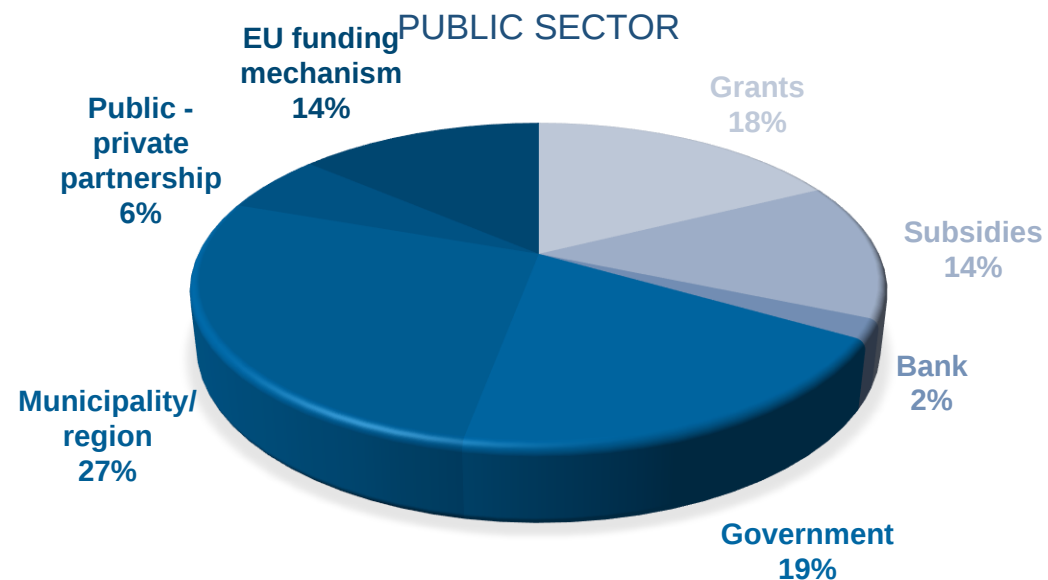
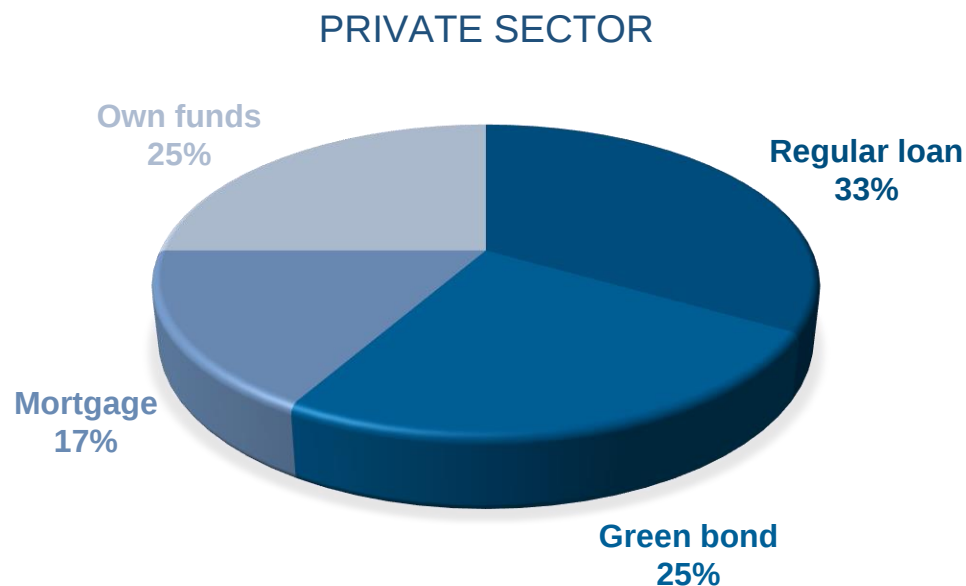
What are the key factors considered to evaluate an energy efficiency project?

The respondents suggested additional factors that could be considered in order to evaluate an energy efficiency project, such as:

- ✓ **Financial incentives:** For instance, tax incentives or other forms of financial incentives could encourage the stakeholders to participate in an energy efficiency project.
- ✓ **Quality:** The quality of the contractor and of the execution might be an important aspect to evaluate an energy efficiency project.
- ✓ **Social impact:** For instance, a project could contribute to correcting inequalities, which is particularly important for public building stakeholders

Analysis of feedback: stakeholder consultation survey (4/5)

Which are the typical financing sources used for energy efficiency projects?



- ✓ There are numerous different financing methods and mechanisms for energy efficiency projects, and selecting the most appropriate for each project is not always easy
- ✓ The private sector and the public sector present very different patterns in terms of energy efficiency financing
- ✓ Tools that can help building stakeholders find the most suitable financing partners or mechanisms could be very useful

Analysis of feedback: stakeholder consultation survey (5/5)

How useful would a marketplace be if it could provide the following services?

Service	Rating
Matching private buildings with Implementors	4.03 /5
Matching EE projects with Financiers	3.83 /5
Aggregating EE projects	3.82 /5
Informing market actors about projects in public buildings	4.06 /5
Matching Implementors and Financiers for public EE projects	3.45 /5
Assisting Public Bodies in exploring EU funding mechanisms	4.44 /5
Matching Public Bodies with market actors to proceed with direct award below the tender threshold	3.94 /5
Presenting best practices based on previously implemented projects	4.41 /5

Analysis of feedback: semi – structured interviews

An energy efficiency marketplace could include...

- ✓ Statistics and visualised results from already implemented projects
- ✓ Insights from similar projects regarding measures and KPIs
- ✓ Energy predictions after the project is completed
- ✓ Information on financing mechanisms for energy efficiency projects in public buildings
- ✓ Aggregation to create large project pipelines
- ✓ Evaluation of energy efficiency projects

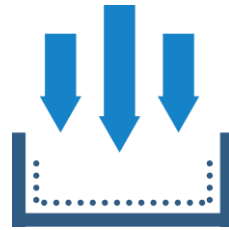
Proposed solution to address the identified needs of the stakeholders: the ENERGATE Approach

Platform Stages



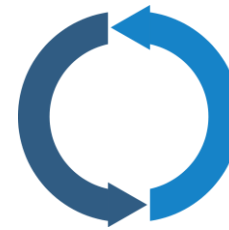
Zero

- User profile
- Registration
- Insertion of user-related data



Fetch

- Collection of structured information about projects
- Ensuring that key technical and commercial information is properly declared



Process

- Identification of similarities between projects and investors KPIs
- Project aggregation and bundling
- Matching opportunities with investors

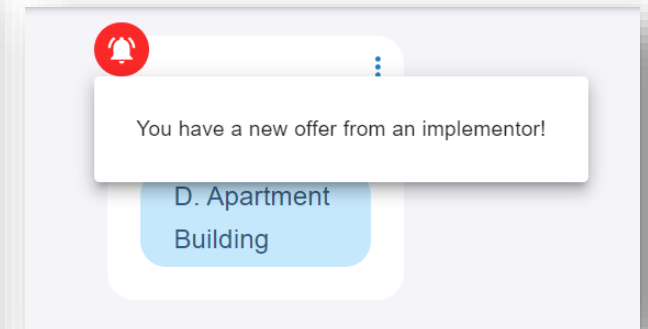
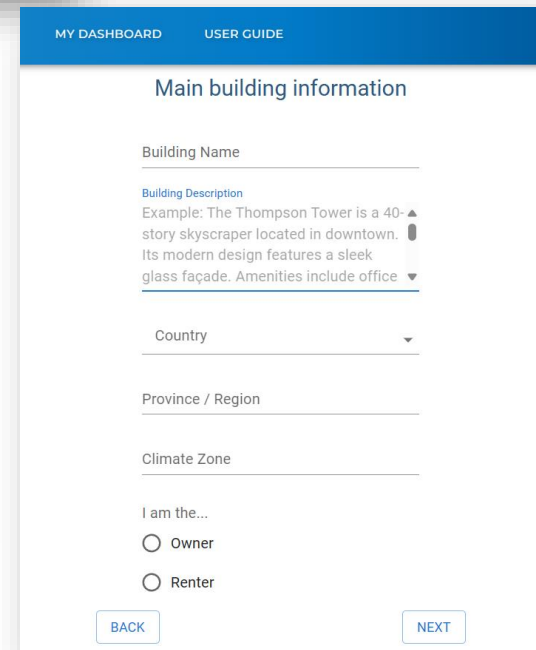
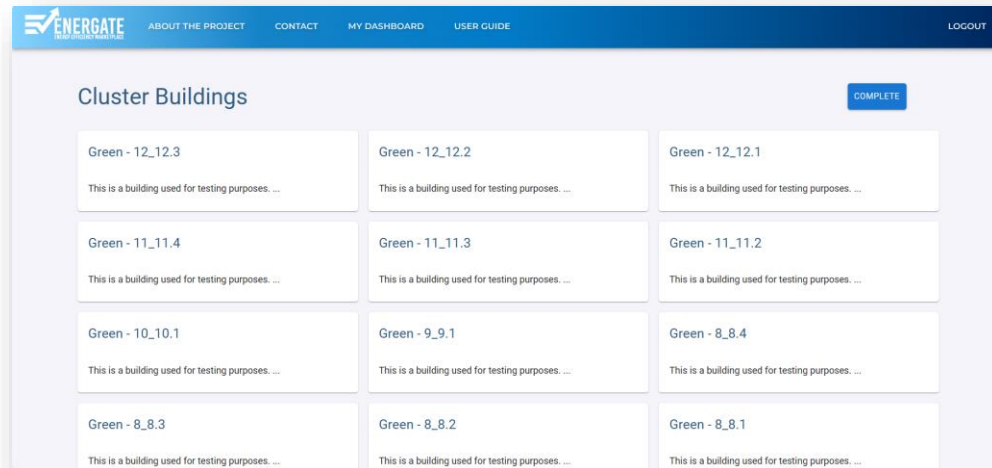
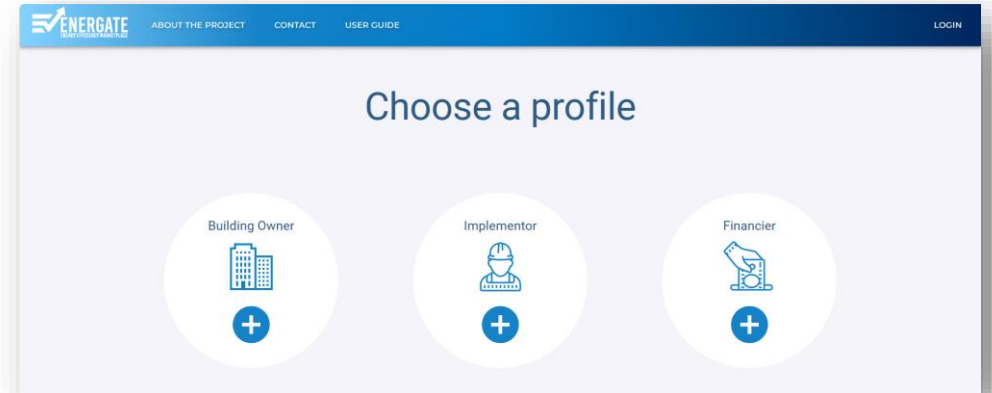


Deliver

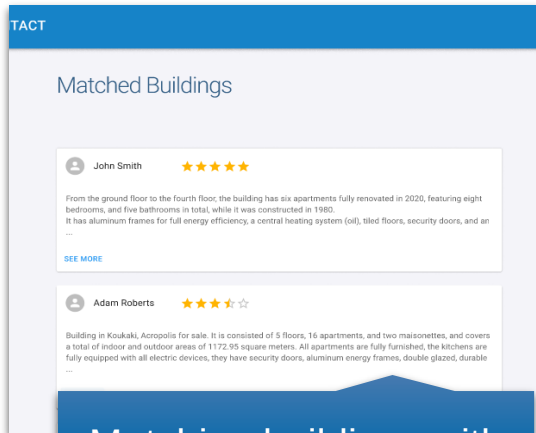
- Follow up on projects
- Validation of M&V methodologies
- Definition of relevant KPIs and benchmarks

ENERGATE Services (1/4)

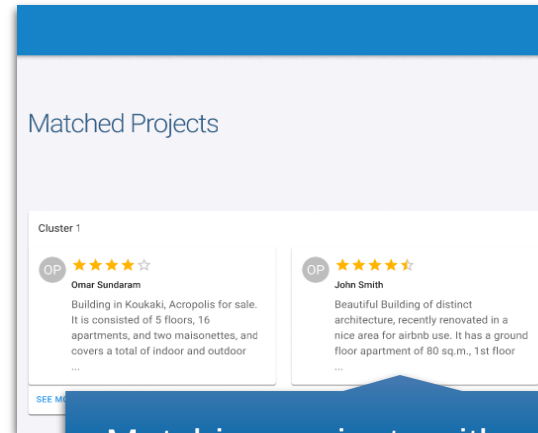
Marketplace UI



ENERGATE Services (2/4)



Matching buildings with Implementors



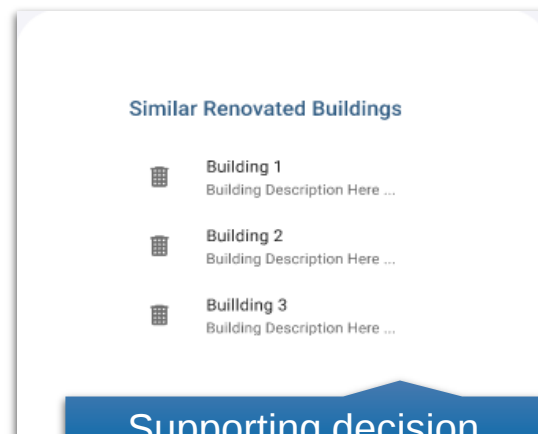
Matching projects with Financiers



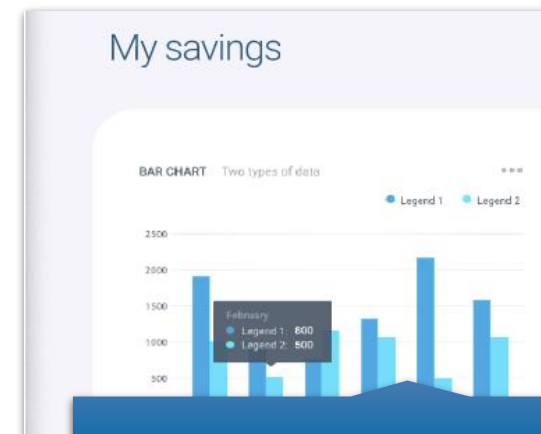
Aggregating projects



Assisting Public Bodies in exploring funding sources



Supporting decision making based on previous projects



Monitoring project results

ENERGATE Services (3/4)

The services are enabled through...

Filtering mechanisms

Multicriteria decision making

Machine learning techniques

Visualisations

ENERGATE Services (4/4)

Filtering mechanisms

- The users must be able to specify KPIs and metrics in order to be matched with buildings or projects
- Filters enable the aggregation of projects based on similarities between them:
 - ✓ Same implementor
 - ✓ Location
 - ✓ Building typology
 - ✓ Type of EE measure
 - ✓ Type of financed offered
 - ✓ Type of contract
 - ✓ IRR
 - ✓ SPB

Multicriteria decision making

- The TOPSIS method is used to prioritise the projects
- The users are able to select different weighting factors depending on which evaluation criteria are more important for them
 - ✓ IRR (%)
 - ✓ Payback time (years)
 - ✓ CAPEX (euros)
 - ✓ Energy savings (%)
 - ✓ CO2 abatement (tnCO2)

Machine learning

- Estimations are provided based on data from projects that have been implemented in the past
- LightGBM is used to predict the energy and CO2 savings from different EE measures.
- Support in identifying and selecting the optimal energy renovation strategy for each new building inserted in the platform
- A meta-learning model will be applied to assess the project and classify them according to their expected utility

Visualisations

- Visualised results, including statistics and benchmarks will be provided so as to monitor project results
- Machine learning techniques may be used to simulate and visualise energy consumption, if data from actual consumption are not available

Conclusions

- A useful tool for the identification of the key actors in the field of energy efficiency financing
- Successful engagement through targeted consultation activities
- Clear identification of the existing gaps and barriers in the policy and decision support processes
- Raise of awareness and the overcome of conflicts and streamlining implementation of sustainable finance
- Reduction of the uncertainty and better understanding of the complexity of the energy efficiency investments in regional level and EU level
- Fine-tailored policy package, offering a concise representation of key outcomes, guidelines for practical implementation and cooperation actions.

THANK YOU

Katerina Papapostolou

Decision Support Systems Laboratory, School of Electrical & Computer Engineering, National Technical University of Athens, Greece

kpapap@epu.ntua.gr



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energate-project.eu



contact@energate-project.eu



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