



D7.3 Results on consultation process

Major findings gathered from stakeholders

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Introduction

M-Benefits – *Valuing & Communicating the Multiple Benefits of Energy Efficiency* is an EU-funded project that aims to increase the volume of energy saving actions implemented by private companies. Using a 5-step method and toolkit, energy managers and other stakeholders identify and include multiple benefits, such as improvements in worker health, productivity or product quality, to show how energy efficiency contributes to a company's competitive advantage. Through this approach, efficiency investment proposals can show how they influence the core business or mission of a company, which makes them more compelling in the eyes of decision-makers.

Key outcomes of the project include collection of structured, evidence-based information on the impact of multiple benefits to the value proposition and costs and risks to the industrial and service sectors; and the development of a toolbox to identify, categorise and value these benefits in any type of energy-saving investment project.

Objectives

Based on the stakeholder identification and engagement strategy developed at an earlier stage of the project (Deliverable D7.1), this report presents the main findings arising from the stakeholder engagement processes that took place throughout the M-Benefits project lifetime. The stakeholder engagement processes involved training workshops and webinars, participation in questionnaires and the pilot projects, but also interaction on a one-on-one basis with the advisory board members.

This report aims at collecting findings and results from the consultation processes in each of the seven implementing countries (Austria, Germany, Greece, Italy, Poland, Portugal and Switzerland) based on their experiences with the different stakeholders. This document will then lead to a final shorter brief with the main highlights and conclusions of the consultation processes that will be communicated back to stakeholders (Deliverable D7.4).

Consultation processes and methodology

As a first step in the consultation process, stakeholders were provided with a briefing note describing the project, and its aims, objectives and reason for seeking stakeholders' inputs. The project partners contacted stakeholders to determine whether they include non-energy benefits in their decision-making processes or their negotiations with clients. This was also a way of creating a first contact with target actors for webinars, trainings and pilot projects. Figure 1 visualises the stakeholder engagement strategy and consultation processes.

The main objectives of the stakeholder consultation were:

- To capture *views and perceptions* of people with an interest in the methodology developed by the project
- To *validate* the methodology as a basis to capture the multiple benefits of energy efficiency
- To enhance *trust and acceptance* of the M-Benefits methodology among stakeholders.

The main stakeholder consultation processes of M-Benefits involved data collection through *questionnaires, training activities, workshops and the pilot projects*. Training activities and pilot projects took place in seven European countries (implementing countries), highlighted in orange in Figure 2.

The advisory board was an important group within the project's stakeholder community but also a core part of our management structure. The advisory board consisted of five distinguished personalities from the international energy-efficiency community: Adrian Joyce (EuroACE), Bruce Lung (Oak Ridge Institute for Science and Education Fellow-Assigned to US DOE), Benoit Lebot (IPEEC), Christian Noll (DENEFF), Marcus Dredge (MGB). The advisory board members were engaged from the beginning of the project, receiving updates on progress over its duration.

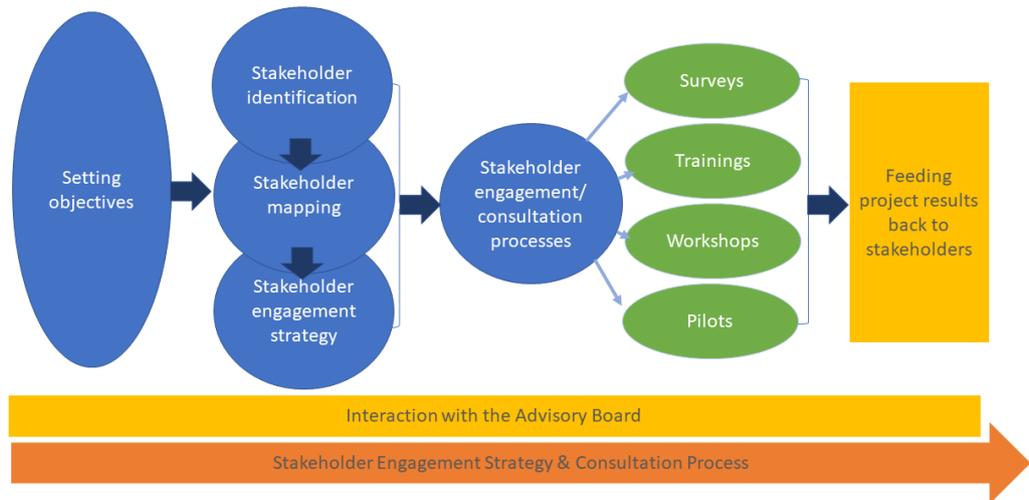


Figure 1: Stakeholder engagement strategy and consultation process

The following chapters give a brief description of the stakeholder activities grouped by activity and country. Key findings across the different activities and countries are summarised at the end.



Figure 2: Map highlighting the pilot countries

Questionnaire survey

The questionnaire aimed at assessing the awareness of companies on multiple benefits of energy efficiency measures and the level at which these measures are applied and implemented. A further aim was to gain insights on the perception of multiple benefits in companies and their role in decision-making processes. Companies that wanted to participate as pilot cases had the opportunity to express their interest when filling in the survey. The survey was launched at the beginning of 2019, in eight languages. In total, 107 companies completed the survey. Most of the participating companies are located in Italy (63%), followed by Germany (13%), Greece (9%) and Portugal (7.5%) (Figure 3).

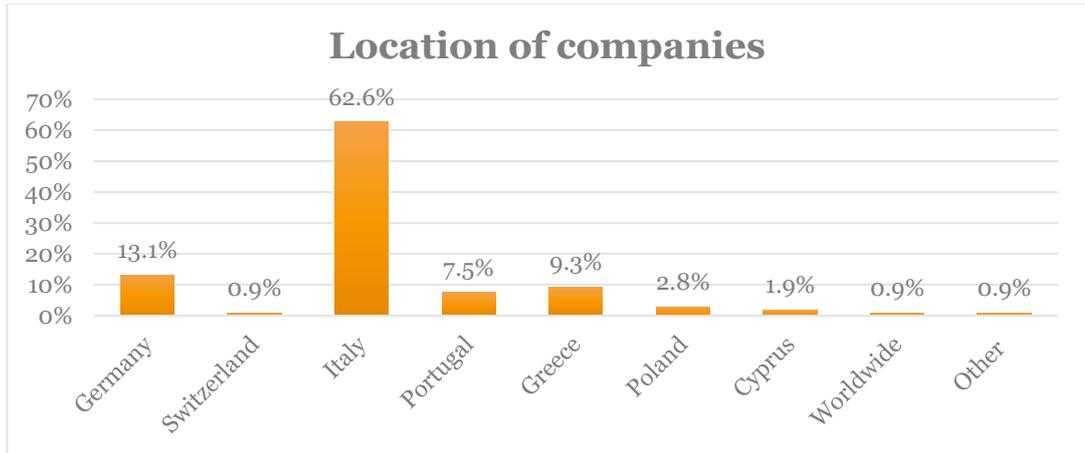


Figure 3: Breakdown of company responses by country

Over 38% stated they were “large companies” with over 500 employees, mainly from the industrial sector, energy-related companies (like energy suppliers, energy service companies (ESCOs) or energy consultants) or offices. The breakdown of companies categorised by sector is presented below (Figure 4).

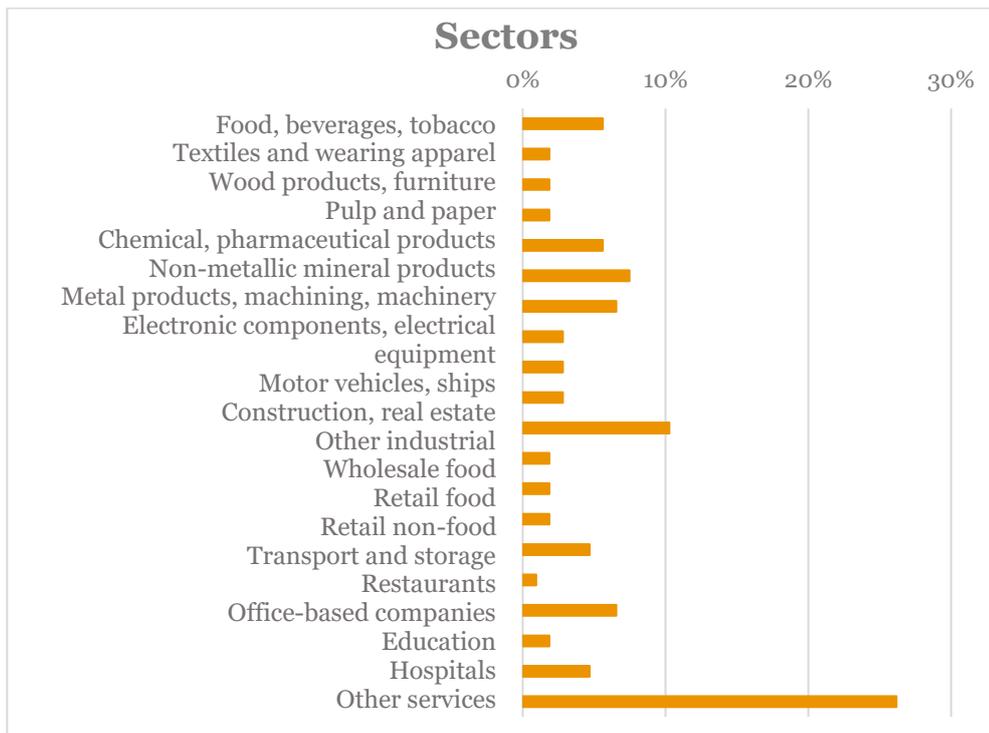


Figure 4: Responses categorised by sector

The survey included the following main topics:

- Introduction (giving a short explanation of the scope and introducing examples on multiple benefits)
- Size and sector of the company, role of the interviewee
- Investments and measures that improved energy efficiency:
 - Were multiple benefits considered in the decision-making process and how were they recognised?
 - Details on measures and the motivation to conduct them, investments
- Which criteria are important when deciding about energy efficiency issues?
- Questions about energy use, audits, energy management systems.

Many of the participating companies were well qualified to report on experiences with multiple benefits as they have an energy manager and were already engaged with energy efficiency measures. Almost half the respondents stated that they have some kind of energy or environmental management system like ISO 50001 or 14001. Nine out of ten companies had implemented some kind of energy efficiency measure; over 80% had conducted an energy audit, and over half of those had implemented measures as a result of the audit. Most of the measures were related to lighting, metering or monitoring, compressed air, HVAC and process heating/ cooling. Of the companies that already implement measures, the *energy saving potential* is the most common decision-making criterion, followed by *costs of measures*, *profitability* and *level of organisational effort*.

An additional objective of the survey was to get further insights from companies that do not implement energy efficiency measures to seek approaches to motivate them in that direction. The most frequent answer was “financial constraints”, followed by “other investments have priority”. This suggests that upfront investments in energy efficiency measures might be an issue even if the measures are profitable in the long run.

Four main categories of non-energy benefits associated with cross-cutting energy efficiency measures in companies were identified:

1. Improvements to working processes (e.g., increased productivity or product quality)
2. Positive impacts on equipment operations (e.g., reduced maintenance costs or malfunctions)
3. Benefits to employees and working conditions (e.g., improved safety, health or comfort)
4. Reductions in (material) use, waste and emissions.

Some of the aforementioned benefits can be linked to specific measures. For example, measures related to heating and cooling often contribute to reduced emissions and reduced maintenance. Measures to reduce waste heating are highly associated with reduced production costs, while measures related to lighting often improve employees’ health and safety. Companies also responded that multiple benefits could play a bigger role in decision-making, depending on the relevance of those benefits to the company’s objectives. Reduced operational and maintenance costs and reduced production costs and losses are rated highest as decision-making factors.

We anticipate using the survey’s results to support future decision-making on various measures and provide companies with a basis to include such benefits in investment calculations.

Training activities¹

Training activities were conducted in the form of webinars and workshops. The webinars were more general and introduced the project and the multiple benefits methodology. The training sessions, which were mostly conducted in person, introduced the methodology and the serious game², played by the participants assisted by the trainers.

The training activities aimed to enable experts to prepare decision memos including multiple benefit assessment and communicate the added value and long-term impact efficiently. They were also used as an enabling tool to engage experts from companies involved in the topic and thereby reach out to potential pilot projects.

Two to three training activities (workshops) were organised in each of the seven implementing countries where pilots took place. The training programme covered the following aspects:

- Business model analysis
- Identification and quantification of the multiple benefits of energy efficiency projects in the design phase
- Application of the communication toolkit
- Playing the serious game.

The findings arising from the training workshops are grouped per country and are presented below. In the parentheses are the names of the implementing partners executing the activities in each of the countries.

Austria (Grazer Energieagentur-GEA)

Training overview for Austria	
Date	Number of participants
8-9 July 2019	13
13-14 November 2019	12

In Austria the experiences with the trainings were quite positive once participants were recruited. GEA used its existing network to reach out to potential participants. Participants joined up via partner organisations (of which one had already signed a letter of support during the proposal phase) and personal contacts. Many follow-up phone calls were needed, as participants were hesitant to join a two-day training (probably due to limited time available). Advertising on social media (Twitter, LinkedIn) did not show any results.

The set-up of the trainings, which involved theory and playing the serious game, was effective and kept participants engaged and attentive until the end of the session. The participants worked in teams and showcased their work through final presentations.

Starting the training with a question on their biggest challenges in the decision-making for energy efficiency projects served as a good ice breaker to kick off the discussion. The early introduction into the serious game gave the participants the chance to take on an active role in the training. The process of getting to know the mechanism of the game was also an opportunity for interaction and communication among the participants.

Another very positive experience for the trainers was the interaction with participants through questions regarding their implemented and planned projects, which allowed for an experience exchange on lessons learned from failed projects.

Although the length of the training stretching over 1.5 days made it quite challenging to find participants, it gave them the chance to reflect on the inputs after the first day and provided

¹ A separate more detailed report on the training courses and their evaluation based on the participants' feedback will be published in May 2021 (Deliverable D5.3).

² The serious game has been developed as one of the main project tools. It is based on a mix of virtual activities (simulations) and real activities (presentations) that develop participants' capacity to take on a complex problem in a global and systemic manner.

added value to the second day. A set of two half-day training sessions was suggested as an alternative, to give participants the chance to plan other activities on the same day.

After the end of the training, a follow-up with participants was necessary to remind them of the project and keep them involved in the topic of multiple benefits and the M-Benefits methodology.

Lessons learned from the trainings in Austria

- Difficult to reach out to new contacts – a certain degree of trust is needed.
- Participant acquisition works better through individual contacts and follow-up calls, while social media and mass mailings do not get a response.
- The training itself is the best opportunity to acquire pilot projects.
- The term “multiple benefits” is misleading – the term “non-energy-related benefits” was used as it was clearer to understand.

Key success factors

- Short and easy messages.
- More talking instead of writing.
- Active listening to clients’ needs and returning an M-Benefits argument.
- Engaging infographics (not essential, but useful).

Germany (IREES)

Training overview for Germany		
Date	Location	Number of participants
22-23 October 2019	Karlsruhe	9
30 January 2020	Karlsruhe	19

In Germany, the acquisition of participants was done along two lines. The first group came from companies, which had already been contacted regarding pilot projects; the second group were energy consultants and energy efficiency network moderators who were involved in previous projects. Based on feedback from participants, the second training was combined with the webinars to shorten the training to one day.

The training was carried out in teams, in a way designed to help the participants apply and understand the tools as if in a real company environment. Each phase of the serious game was introduced through a presentation based on the concepts discussed during the webinars.

Lessons learned from the trainings in Germany

- The trainings were a good opportunity to acquire pilot partners and to get in touch with new companies.
- The second training was a combination of the webinars and the serious game conducted in Karlsruhe. The webinars and the scheduling of one lesson (unit) per day meant the content could be explained in depth while giving time for reflections in between.
- When combining webinars and on-site training which build on each other, it is necessary to have a refresher session before playing the different steps of the serious game.
- The webinars were compulsory to attend the serious game, which ensured strong participation in both formats.

Greece (NTUA)

Training overview for Greece	
Date	Number of participants
5 May 2020	3 (Pilot 2 and Pilot 3)
7 May 2020	3 (Pilot 1)

In Greece the trainings took place at a time when in-person events were not possible due to the Covid-19 epidemic, so they were conducted as virtual e-trainings. In contrast to the other implementing partners, NTUA conducted the trainings only with companies that agreed to participate as pilot projects.

Lessons learned from the trainings in Greece

- Companies were not willing to invest the time of their employees for the trainings, so the concept was changed to only involve staff related to the pilot companies.
- Companies/organisations do not easily allocate training time for their employees for activities/programmes suggested by external providers. Even if they do, they do not allocate more than one person and for a limited time.
- Companies/organisations/individuals preferred webinars and in general remote training instead of in-person, apart from a few exceptions.
- Organising larger events on a fixed date is challenging, so it was suggested to organise a series of smaller events when the stakeholders are available. This might require more time and effort from the trainers to organise but could provide a greater impact.

Italy (FIRE)

Training overview for Italy	
Date	Number of participants
24/09 & 3/10/2019	11 (theory), 5 (serious game)
24/09 & 14/10/2019	18 (theory), 12 (serious game)

FIRE divided its trainings into two parts: an online half-day training which gave a theoretical background (methodology and financial analysis), and a one-day in-person training session for playing the serious game. In the second part of the training, the participants were already well aware of technical aspects of multiple benefits (that were presented during the online half-day training), which made the serious game more engaging. The participants were a mix of people who didn't know each other and those who worked in the same company but in different functions.

Lessons learned from the trainings in Italy

- Diverse groups allowed a more stimulating discussion than having all participants working for the same company.
- Participants working in large companies noted that the internal process of the serious game (e.g. reaching top management, exchange with other functions) was very simple compared to their daily experience. This is no surprise as it will always be easier in a case study and the serious game is better suited for use in small companies.

Poland (KAPE)

Training overview for Poland	
Date	Number of participants
13/11/2019	11
20/11/2019	32

In Poland the trainings were targeted not at companies but at students of Management and Production Engineering at the Faculty of Production Engineering – Warsaw University of Life Sciences. The idea behind this was to enlarge the scope of the potential target group and to inform future energy managers about the importance of non-energy benefits and their real implications. The essential aim of the first training was therefore to present the M-Benefits methodology in general, explaining every step of the process. The same training was conducted for two groups of students separately.

Lessons learned from the trainings in Poland

- Theoretical introduction is needed and very useful for playing the serious game.
- The game reflects a company's reality in a realistic way.
- The game includes a lot of information and materials to be read, which requires a significant amount of time.
- The training added to future energy managers' knowledge on multiple benefits and will certainly bring positive results in the future.

Portugal (ISR)

Training overview for Portugal	
Date	Number of participants
11/11/2019	15
9/12/2019	17
9/12/2019	21

In Portugal, three trainings were carried out to maximise the number of participants, and at the same time to reach stakeholders with different backgrounds and professional experiences.

Stakeholder outreach for the trainings was carried out through three channels, one for each training: the University of Coimbra (Institute of systems and robotics-ISR), for students specialising in energy management; the Portuguese Directorate-General for Energy and Geology, for reaching energy managers through their contact list; the Engineering Association, for reaching engineers working in the field of energy efficiency.

The trainings reached a high participation with participants being very involved in the activities and engaging with the serious game. Post-training evaluation showed that the participants found the training interesting and engaging.

The experience with PhD students of the Energy for Sustainability course of the University, was interesting. The younger generation, being very skilled and comfortable with digital technologies, got deeply involved and understood the logic of the game. On the other hand, the experience with more senior experts working in the field showed the need to carry out more training like this, because they appreciated this new form of learning. They especially liked the opportunity to work with other colleagues from different areas, backgrounds and ages (even with some competitors). It took much longer to complete this training, but the sharing of experiences and knowledge gained in the field was an added value for the simulations.

Lessons learned from the trainings in Portugal

- Offering *free* services was a good argument for participation.
- It is difficult to convince company staff to commit sufficient time to the project.
- It is difficult to convince potential pilots of the advantages of the methodology without good practical examples.
- It is difficult to organise trainings within companies, due to problems of gathering sufficient personnel to make it interesting. It would be possible to combine one or more companies to overcome this.
- When contacted informally, potential trainees are not very enthusiastic about trainings lasting more than one day.
- Initial face-to-face meetings are very important in bringing people on board.

Switzerland (HSLU)

Training overview for Switzerland	
Date	Number of participants
23/1/2020	6
28/4/2020	11

In Switzerland it was not possible to find companies who would sign up their employees for a two-day workshop, which is why a more flexible training was developed by HSLU. The training was done through an e-learning tool based on the content of the three webinars, which were held by HSLU during September/October 2019. All participants took the e-learning course in January 2020. After successful completion of this training, a one-day workshop including a Q&A session and the serious game was held on January 23, 2020.

Lessons learned from the trainings in Switzerland

- The process of finding participants is very time consuming for trainings, webinars, and workshops, it was not possible to reach the required number of participants by email only.
- It helps to have industry associations and energy agencies reach out to companies and actors.
- In Switzerland there are many actors who are active in the multiple benefits “market”.
- Using the short version of the serious game could make more sense given the time constraints.
- Companies seem to be more interested in tools for identifying possible CO₂ reduction measures. CO₂ and energy reduction are of strategic relevance in many companies.
- Selling pilot projects as “training on the job” (on a real case) helped a lot to gain interest in companies.

Workshop/symposium

As part of the stakeholder engagement and distribution of results, BPIE organised a symposium with the support of Borg & Co in Berlin, Germany on 28 October 2019 (Figure 5). It was organised in cooperation with a German project³ on multiple benefits in the residential building sector.



Figure 5: Presenting the project at the symposium in Berlin

The symposium highlighted and discussed lessons, methods and tools from both projects. Participants learned about the different approaches to quantify the multiple benefits of energy efficiency, how they can be integrated in decision-making and how to communicate them with relevant stakeholders. Expert presentations from Robert Bruce Lung from the US Department of Energy and Koen Verdru from the Dutch Mijns Huis association rounded off the event.

A total of 63 people registered for the symposium, and due to its location a large number were German stakeholders. The presentations generated significant interest and were valued as very useful to familiarise people with the topic. The symposium was also seen as a good networking opportunity.

The afternoon session was split into two workshops – one for the German project and one for the M-Benefits project, in which the serious game was introduced and participants were able to participate in groups. Only a limited number of people participated in the serious game workshop, as the German-speaking participants were signed up for the German workshop, which was conducted in parallel (Figure 6). The remaining participants found the serious game introduction very useful and recommended more sessions should be organised as side events at energy efficiency conferences to expand the reach.

³ [Multiple benefits as drivers for building renovation](#) aimed to improve communication on multiple benefits in building renovation and identify barriers and opportunities for quantifying and including them in investment decisions.



Figure 6: Workshop breakout discussion

The participants who took part in the German workshop showed a high interest in joining an additional workshop on the serious game, if it were to take place in Berlin or their place of business. This option was considered by IREES, but due to the pandemic in 2020, it could not be achieved.

Advisory board engagements

On 29 October 2019 five members of the advisory board met with project partners. The purpose of the meeting was to discuss the status of the pilot projects and validation of the methodology; identify potential synergies including opportunities to broaden use of the methodology, influence policy, etc.; and inform planning of the final conference. Advisory board members suggested that the following areas should be explored further in the context of the project and beyond:

- Approach training organisations/trade associations about including the M-Benefits curriculum in training programmes; build training capacity.
- Approach standards organisations about creating a standard method; potential for new standard.
- Explore linkages with policy/policymakers, e.g. national-level energy efficiency strategies.
- Expand evidence base and access to evidence (quantification of multiple benefits).
- Broaden exposure of the training, tools, findings and approach; expand audience.

The notes from the meeting identify additional examples and details.

Following this meeting, the M-Benefits partners continued engagements on a one-on-one basis with advisory board members. In particular, Adrian Joyce of EuroAce has provided helpful input to inform synergies with European and national-level energy efficiency and related policies/initiatives. Adrian agreed to moderate a session at the final conference entitled “*Multiplying our impact with multiple benefits*” where this theme will be further explored and developed. A summary of synergies with policy/programmes will be informed by the final conference and documented in the WP8 “Synergies” deliverable.

In addition, Bruce Lung of Oak Ridge National Laboratory (USA) recruited UNIL to present the M-Benefits approach and logic at a US Department of Energy Better Buildings webinar held on 12 January 2021. A total of 1,300 people registered, of which 600 listened to the live presentation. Bruce Lung will also participate as a panellist at the final conference.

Pilot projects

A total of 22 case studies representing companies and industries in seven countries were selected to implement and validate the M-Benefits methodology.

Austria (Grazer Energieagentur)

Pilots overview for Austria		
Number	Sector	Size
1	Glass industry	Large
1	Industry for mining equipment	Large
1	Steel industry	Large
Total number of pilots: 3		

One of the most challenging aspects of the Austrian pilots was to hold the attention of the person responsible for the company's pilot on the analysis and communication. They were often distracted by their daily business and internal decision routines, losing interest and motivation for the pilots. Allocating a budget and personnel resources for contributing to the analysis of the multiple benefits of energy efficiency would positively affect the execution; this did not happen in the Austrian pilots. In addition, very frequently companies did not provide the necessary figures for the financial assessments.

Decisions for investments in companies were made without waiting for the results of the corresponding work executed for the pilots. Specifically, a glass factory introduced an energy monitoring system while a steel manufacturer improved its logistics as well as its thermal insulation without consulting the project's experts. The arguments for these decisions were mostly qualitative and not very structured. As a lesson learnt, an early and rapid execution of the multiple benefits analysis would have a greater impact in the decision-making process.

One project started as an energy efficiency project, but the focus shifted to optimising logistics, with a very small energy efficiency component. Arguably, even though the project was triggered by the energy efficiency idea, the energy efficiency itself did not grow with the rest of the project but stayed constant in absolute numbers.

Another important lesson learnt from the Austrian pilots was that the execution of the trainings was a great door opener for pilot projects. All three implemented pilot projects were a result of the trainings.

A big step in support of the M-Benefits methodology would be to incorporate the assessment of non-energy benefits into regular energy audits. This would probably require a simplification of the M-Benefits process and tools. Another open question in this respect is whether the added effort for the service of calculating of multiple benefits could be charged to the company-client.

Overall, from the analysis of the Austria pilots, it was found that non-energy benefits have a positive impact on the status and prestige of an energy efficiency project

Germany (IREES)

Pilots overview for Germany		
Number	Sector	Size
1	Food industry	Medium enterprise
2	Hydraulics	Large enterprise
1	Life science	Large enterprise
Total number of pilots: 4		

The findings from the German pilots are summarised below:

- The list of non-energy benefits and the examples provided were seen as very helpful guidance for energy managers when evaluating non-energy benefits.
- The “critical to quality” parameter helped a lot to identify relevant multiple benefits.
- Energy managers are able to expand their views on the energy measures and integrate them in a language that is more attractive to management.
- A highlight for our pilot projects was the use of energy and process diagram and flow. Together with the questions on success criteria (quality, time to market), this was very useful in identifying non-energy benefits.
- The financial evaluation tool was a great benefit – companies used it themselves internally to get a quick first impression of measures.
- Customised trainings were conducted for the different pilot companies that did not participate in the training. This had a very positive impact and resulted in faster outcomes of identification of multiple benefits.
- Medium-sized companies were most interested in the methodology.
- Companies that follow lean management processes are already taking into account the strategic aspects for each investment.
- The quantification process of multiple benefits is the challenge, and the collection of data from other departments proved to be difficult as well. The energy managers did measurements to obtain additional data but quantification was not always possible.
- Energy managers tend to be unwilling to present assumption-based (and not fact-based) numbers to the advisory board.
- If the quantification of certain multiple benefits wasn’t possible or could not be reasonably presented, they were communicated in a qualitative way so that they weren’t underestimated.
- Not every energy efficiency measure leads to additional non-energy benefits.
- In the cases where the multiple benefits tool was used, users evaluated it differently depending on their knowledge, available time and focus to work through the process. The energy audit sheets were not always used since companies have energy management systems in place that have that information.
- Understanding and filling in the required data for the multiple benefits tools was very time consuming according to some of the energy managers.
- The results did not always justify the time invested in the pilot process. However, the experience gained should lead to shorter processes in future.
- The serious game highlighted the importance of communication and that different departments need to work together, but this is difficult to implement. Remote working during the pandemic made communication even more difficult.
- Attracting companies to become pilots was very time consuming, especially if they hadn’t attended the trainings.

Greece (NTUA)

Pilots overview for Greece			
Number	Sector	Size	No. of energy efficiency measures evaluated
1	Aluminium	38	3
1	Retail – warehouse	250	2
1	Retail – warehouse	230	1
Total number of pilots: 3			

The consultation process in Greece started by searching among specific types of stakeholders, including contacts from potential pilot companies, owners in industry, energy auditors, engineers, associations and organisations, and governmental and policy planning actors. Some of these were already engaged in the initial gathering of “Letters of Support” or “Letters of Intent” on behalf of NTUA during the proposal preparation phase. These have been enriched with additional individuals who expressed their interest or registered for the M-Benefits newsletter through its website.

During the project, and especially during the webinar organisation, additional individuals became interested in the project and its results. It was concluded that stakeholders do not usually include non-energy benefits in their decision-making processes or in their negotiations with clients. If they do, they do not consider them as non-energy benefits, but as extra issues to be taken into consideration in an energy investment analysis. All stakeholders were interested in the extra value (quantified or not) that the implementation of an energy efficiency measure can bring to an investment. The aspects of particular interest were the added value to the financial returns and for final users/customers, i.e. product or service quality. Employee health and safety was also an important aspect. Overall, there was strong interest in the potential of quantifying the multiple benefits of energy efficiency measures.

Italy (FIRE)

Pilots overview for Italy		
Number	Sector	Size
1	Building	Large
1	Gas treatment (utility)	Large
1	Wastewater treatment (utility)	Large
1	Oil treatment (utility)	Large
Total number of pilots: 4		

The M-Benefits methodology was very much appreciated by the Italian pilot companies since it enables energy efficiency investments to be evaluated in a different way. By giving companies the opportunity to have an integrated view of all the possible benefits, it further allows them to improve the economics of the intervention. In addition to the financial benefits, companies that have started to adopt such multiple-benefits analysis witnessed an improved collaboration process among the different departments of the company, with several positive impacts on core and strategic activities.

The management team’s commitment was found to be key towards the adoption of the M-Benefits methodology. Without this, it is more difficult to involve the different functions of the organisation to obtain the necessary data for the analysis. In the Italian pilots, a high interest and commitment from the management team was registered, as well as a fair collaboration with other functions.

The pilot projects in Italy through the M-Benefits methodology have enabled companies to put *energy efficiency first*, by transferring a policy recommendation to an operational level. In addition, besides the economic savings of the pilots, a great success factor of the methodology is the possibility for companies to repeat it in other future projects once it has been digested. This is a great takeaway for companies involved.

A further lesson learnt from the Italian pilots was that companies that were not familiar with the evaluation of multiple benefits needed more support from the implementing partner (corresponding project expert) in multiple ways, including involvement in internal meetings throughout the pilot. Companies which were already aware of the evaluation of multiple benefits were more familiar with the methodology.

Data needed for the financial analysis of the methodology is not always manageable within companies, especially in large ones. The current trend of teleworking due to the pandemic is a significant barrier in this area, as in-person meetings can make data exchange smoother.

Last but not least, energy service providers could be valuable “multipliers” by spreading or integrating the M-Benefits methodology in their work flows. Through the experience with the Italian pilots, the parties often have a mutual aim: to raise the profile of energy efficiency through investments in energy saving actions/projects.

Poland (KAPE)

Pilots overview for Poland		
Number	Sector	Size
1	Manufacturing (furniture)	Small enterprise
1	Manufacturing (food products)	Medium-scale enterprise
1	Manufacturing (dairy products)	Medium-scale enterprise
Total number of pilots: 3		

Energy efficiency is not a priority for most enterprises in Poland. The main objective of companies is maintaining smooth operations without any breakdowns. Investment decisions in enterprises are taken after deep consideration and not very frequently, usually 1-2 times per year. Due to the high competition between investment projects, it is tough to convince the selection committee to implement energy efficiency measures. The inclusion of non-energy benefits in the investment proposal on energy efficiency is a key to raise the chances of the project significantly. However, enterprises are often hesitant on many services and measures offered by external providers due to lack of trust.

Obtaining information required for the estimation of multiple benefits of energy efficiency from different departments of a company is a very time-consuming process. It needs a lot of persistence, considering that employees are very busy. Commitment to the execution of the methodology from the company’s side is also crucial for its successful adoption.

A key element for starting the identification of non-energy benefits is through high-quality energy audits. Many energy audits do not even include a preliminary profitability analysis of the proposed energy efficiency measures. The identification of all possible non-energy benefits needs thorough analyses, ranging from technological processes consuming energy to the enterprise and management structure. Currently, there is no practice/culture of executing energy audits. Large companies are legally obliged to carry them out every four years, but there is no quality control over the way these obligatory audits are elaborated.

When companies apply for financing, banks seem to respect non-energy benefits as well. This shows that holistic analysis and its impact on cost savings improves creditworthiness.

Portugal (ISR)

Pilots overview for Portugal		
Number	Sector	Size
1	Services	Large
1	Industry	Large
Total number of pilots: 2		

In Portugal, the contact with the prospective pilots was based on established, confidence-based relationships with companies that had cooperated with ISR-UC in previous projects. Interest in participating in pilot projects was also expressed by companies that participated in the serious game workshops (trainings).

The implementation of the pilot projects was seriously delayed due to the pandemic. Collaborating companies were temporarily shutting down or working at only partial capacity. Some companies even ceased their cooperation due to the impact of the pandemic.

Energy efficiency was found to be a low priority for the companies contacted, which was worsened by the pandemic. Although stakeholders were initially receptive to the project concept and were willing to collaborate, as time went by and as they realised there was the need for their staff to spend some time on M-Benefits and get involved with the serious game, their enthusiasm was decreasing. The arrival of the pandemic further aggravated this situation. Although companies were interested in energy efficiency in a broad sense and recognised that multiple benefits such as air renewal were even more relevant during the Covid pandemic, concerns about the economic situation overtook all other agendas. The time to dedicate to the pilot project (e.g. for the collection of data and completion of spreadsheets) was very limited and it was difficult to schedule meetings, which were sometimes postponed due to the emergence of more pressing issues. Even when a simple energy audit based on measurements in the installations was offered as an incentive, it became very difficult for the project implementing partners (experts) to maintain collaboration with some pilots. Even companies that had shown their interest with a letter of support failed to collaborate in due time.

The multiple benefits of energy efficiency are difficult to be understood and not easy to sell. Any communication therefore needs to be tailored and integrated within the corresponding company's regular processes to better involve field parties. Offering a more varied schedule of activities, for example energy audits, in return for their collaboration seems to work well: at least three potential pilots requested an energy audit in their facilities. But these have considerable costs that need to be foreseen.

Even though companies were willing to participate, industrial companies were reluctant to go ahead when they realised the amount of data that was needed to carry out the pilot. Amid the Covid pandemic and with staff being laid off, companies just could not keep their promises; however, they were reluctant to admit they had failed in their collaboration with M-Benefits.

Although companies show interest in energy efficiency issues and projects (evidenced by their involvement with the M-Benefits project and past energy efficiency projects promoted by ISR-UC), the level of energy efficiency management is low. Energy management is a function carried out by the production or maintenance manager, and therefore sometimes given secondary consideration.

Switzerland (HSLU)

Pilots overview for Switzerland		
Number	Sector	Size
3	Retail	Large (106,000 employees)
Total number of pilots: 3		

The process of recruiting pilot companies was challenging and time-consuming in Switzerland. However, when energy managers agreed to participate, they were aware of the multiple benefits, even before conducting the pilot projects. They already think in a holistic way and already consider the benefits of energy efficiency investments beyond energy savings. For all three pilot cases with companies, consideration of the multiple benefits led to an improvement of the payback period. In two cases the payback time improved significantly.

Nevertheless, in general, the participants found the effort/value ratio not convincing enough to find arguments for future employment of the M-Benefits methodology. Companies are interested in a tool supporting the automatised identification of multiple benefits of energy efficiency without additional efforts. In most cases, a quantification of multiple benefits was possible, but very time-consuming. The M-Benefits toolkit doesn't address the major issue of considering multiple benefits in the capital budgeting: time and resources needed for the identification and quantification of the benefits of an investment. Companies need numbers, i.e. payback time. Qualitative ('strategic') arguments are of little value in the company's decision-making process.

A further lesson learnt from the Swiss pilots is that energy managers have excellent skills in capital budgeting: during pilot project execution, energy managers identified several bugs in the financial spreadsheet of the M-Benefits evaluation toolkit (e.g. Sheet 4). The toolkit is considered more of a tool for the documentation of the pilot projects and does not really support the multiple benefits identification process, which is what the participants of the pilot projects expected from such a tool.

Considering that this is a high-risk research project aiming at pursuing novel and original results, potential failures may occur. In addition, taking into account that this is a summary of qualitative findings, subjectivity can also influence the way outputs are translated and understood.

Key findings and conclusions

The majority of stakeholders were interested in the methodology developed by the project. However, companies' responsible parties were hesitant to their staff to attend the training or agree to participate as a pilot project without a clear picture of what they would gain.

Although there was interest in the methodology developed by the project, multiple benefits were not top priorities for most of the pilots, and many of the companies do not include non-energy benefits in their decision-making processes. However, a few stakeholders recommended that energy audits could include the identification of non-energy benefits. On that point, some stakeholders mentioned that the expression 'non-energy benefits' better represented the context of the work than 'multiple benefits'.

Bringing together different stakeholders to learn from each other's experiences as part of the training method seemed a useful process. Stakeholders who were aware of the concept of multiple benefits were easier to convince to either attend the training or be part of the pilots testing the methodology. The training was well received after the trainers made specific adaptations. The workshop also showed that energy actors are very interested in the methodology and that it works well to explain and visualise the multiple benefits of energy efficiency.

Company acquisition overall seemed very challenging and time-consuming; however, webinars and trainings (serious game) played an important role in introducing actors to the methodology and were a 'door opener' for pilots. Through the trainings, stakeholders could see which benefits they would gain (e.g. improvements of the payback period when considering multiple benefits), which were then highly valued.

Overall, considering that the adoption of the methodology is a time-consuming process, high levels of commitment from the management team of the company are required to ensure successful implementation.

Key findings across the consultation process:

- Multiple benefits are not yet widespread knowledge for stakeholders working in companies and therefore are not a top priority for investment.
- Introductory webinars and trainings using the serious game can significantly increase the interest and attract stakeholders in adapting the M-Benefits methodology.
- It is important to emphasise the resulting benefits for the company and show some numbers on how multiple benefits can improve the work beyond energy efficiency.
- Communication and personal contact are key to attracting the right stakeholders and keeping them interested.
- High commitment from the management team is required to successfully adopt the M-Benefits methodology.