



D2.3 Lessons learned for frameworks and concepts of multiple benefits

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Table of Contents

Purpose and format of this report	4
Research in a changing context	4
Introducing the M-BENEFITS method.....	5
Learning from Case Studies	6
Learning from project partners	7
<i>Previous experience of working with organisations</i>	8
<i>Learning to use the methodology & personal learning</i>	8
<i>Covid problems</i>	9
<i>Persuading companies to engage</i>	9
<i>Experience of using the methodology</i>	10
<i>How well do you think the methodology worked in terms of influencing company decisions?</i>	11
<i>Challenges of the methodology</i>	12
<i>Developments or improvements to the methodology</i>	13
<i>Legacy of the project</i>	14
<i>Final thoughts</i>	15
An evolving literature	15
<i>Overall lessons from the new literature</i>	20
Key lessons	21
Conclusions	23
References	23
Appendix 1: The M-BENEFITS Serious Game.....	24

Purpose and format of this report

The key purpose of this report is to document lessons from carrying out the M-BENEFITS research and its implementation so that the methodology can continue to be developed and practitioners outside the project can learn from the project. It adds to findings already published in conference papers and via other M-BENEFITS reports. The unique contribution of D2.3 to the project is to answer the question: To what extent were the concepts and methodologies of M-BENEFITS useful and effective, based on the experience of project delivery partners?

First, this research is situated in a changing context, summarising important relevant changes to policy that have occurred during the M-BENEFITS project. Then, learning from empirical experiences in M-BENEFITS is set out in two ways, firstly via a summary of the case studies (reported in more detail in D6.2). Then comes the new and more substantial contribution: analysis of the experience of M-BENEFITS project partners who have learned to use the new tools and methodology and have used it with real-world stakeholders. They are some of the most experienced users of the new methodology. D2.3 therefore focuses on capturing the collective experience and reflections of the delivery partners, and relating it back to the early conceptual work done in D2.1 and D2.2. Threads from all these forms of analysis are brought together in a section on key lessons.

Finally, there is a selective review of key literature which has been published since M-BENEFITS' previous literature review was published in 2018 (report D2.1). The purpose of which is to reflect on whether any major developments have occurred during the period of the project which could affect learning from M-BENEFITS.

To avoid confusion, this report uses these spelling conventions:

- M-BENEFITS (upper case with a hyphen) – this indicates the EU-funded project, of which this report is a part
- Multiple benefits (sentence case) or MB (abbreviation) – the concept of benefits related to energy efficiency that includes both energy and non-energy benefits

Research in a changing context

The M-BENEFITS project formally began on 1st March 2018. Since that time there have been strong public movements in favour of taking more action on climate change, and increasing carbon reduction commitments at the multi-national, national, city and company level. These affect the public policy and commercial environments into which our research results arrive.

Climate change targets have become more ambitious at national and EU level. In June 2019, the UK and France became the first major economies to set net zero targets for 2050 in law. On 12 December 2019 the European Council endorsed the objective of achieving a climate-neutral EU by 2050 (European Commission, 2020). Many other EU countries have also set net zero by 2050 targets within national law (Darby and Gerretsen, 2021). The mechanism by which nations meet their Paris Agreement commitments is through 'national determined contributions' (NDCs), targets they set themselves. The EU's initial NDC under the Paris Agreement was the commitment to reduce greenhouse gas emissions by at least 40% by 2030 compared to 1990. In December 2020, the EU submitted its updated and enhanced NDC target to reduce emissions by at least 55% by 2030 from 1990 levels. This commitment applied to the EU and its Member States, acting jointly (European Commission, 2021).

It is too soon to know in detail how these changing targets will affect businesses and their energy efficiency and renewable energy investment decision-making. However, we have already heard from companies in the M-BENEFITS case studies that it is affecting their thinking. For example, a German company has said that new carbon reduction targets are

influencing their decision-making criteria, e.g. changing the length of payback required in company policies. It is also influencing new business-focused climate policy – e.g. the UK's new SME Climate Hub provides a one-stop-shop for SMEs to make a climate commitment and access high quality tools and resources. These provide support in regards to measuring emissions, developing climate strategy, and reducing emissions and the emissions in businesses' value chains (smeclimatehub.org).

The UK has left the EU, which may lead to longer term divergence in future research collaborations, energy policy and business practices, but had no immediate effects on the project.

The Covid pandemic has disrupted normal life since March 2020 and continues to affect social and business activity across the continent, as well as EU and national plans to 'build back better'. It has limited the fieldwork and case studies in this project, as explained in later sections. It has been considerably more difficult to engage and work with businesses than anticipated.

Introducing the M-BENEFITS method

At the beginning of the project, in 2018, a rapid evidence assessment of the literature was undertaken (D2.1). In this report the M-BENEFITS project team contrasted two different overall approaches to the topic of 'multiple benefits of energy efficiency', which provide useful context for the presentation of this report D2.3:

- The 'energy saving' approach – benefits are expressed in physical terms (the energy savings resulting from energy-efficiency projects) and then translated into monetary savings of monetary 'savings' that will accrue, compared with the initial costs (the classic benefit-cost analysis). The concept of multiple benefits is used to expand the number and type of benefits beyond the narrow traditional focus on energy cost savings (eg improved reliability/reduced maintenance costs; increased productivity)
- The 'salience' approach – a different starting point, which focuses on core business objectives and the importance of uncertainty and risk in shaping investment decisions in organisations. Energy efficiency becomes important only insofar as it relates to these other, more salient concerns. The logic is not based on a promise of lower future running costs; it is about achieving broader strategic business goals and managing uncertainty.

The M-BENEFITS method was developed to equip consultants and energy assessors with the skills, language and tools needed to operationalise the salient features of investment decisions for the firms making the investment. This involves an enlarged and cross-cutting approach in discussions with firms on investment decisions, based on threefold analysis of the firm:

- Operational – a detailed account of business activities and processes
- Strategic – analysis of the core business and objectives of the firm
- Financial – an analysis of costs and benefits using established methods in business management.

In other words, the M-BENEFITS method is an investment decision support tool.

Specifically, strategic business objectives are related to competitiveness, which is based on three concepts that are more familiar in the business management world than the energy efficiency world: value proposition, cost and risk. Analysis of these three elements frames an investment option and its possible attractiveness for the investor.

As this approach is still new (at least in the energy efficiency community), there is value in capturing the learning and observations of the assessors who undertook the training and carried out the assessments and interactions with company stakeholders.

Learning from Case Studies

M-BENEFITS partners undertook case studies with companies in Switzerland, Germany, Poland, Portugal, Greece, Italy and Austria. In each case a detailed evaluation of one or more energy efficiency or renewable energy option was undertaken with a company, using the M-BENEFITS method of analysis. These are reported in detail in T6.1. Here a summary and selected highlights are reported as a basis for the analysis.

The case studies covered a very wide variety of technologies, sectors and scales of intervention. Technologies included efficient lighting, heating and specialist machinery, improved control and metering systems, and PV and solar water heating. Sectors featured included the glass and aluminium industries, furniture makers, food factories and supermarkets. These cases also differed considerably in the economic case for adoption both before and after multiple benefits had been added to the calculations. In all cases, the simple payback period was shorter after multiple benefits were included. In some cases, the project went from a payback of decades to years, whereas in others, the difference made by including multiple benefits was marginal (Figure 1).

For each project, Figure 3 shows the payback time (in years) where only energy benefits are counted plotted against payback where non-energy benefits are also included. Each data point represents one project. If there are no quantified multiple benefits, the payback period will be the same for both methods of calculation (as represented by the line of equal payback). Where there are multiple benefits, the payback period will be lower than the energy only payback period. Thus for all projects located **above** the line of equal payback, inclusion of non-energy benefits has reduced the project payback period.

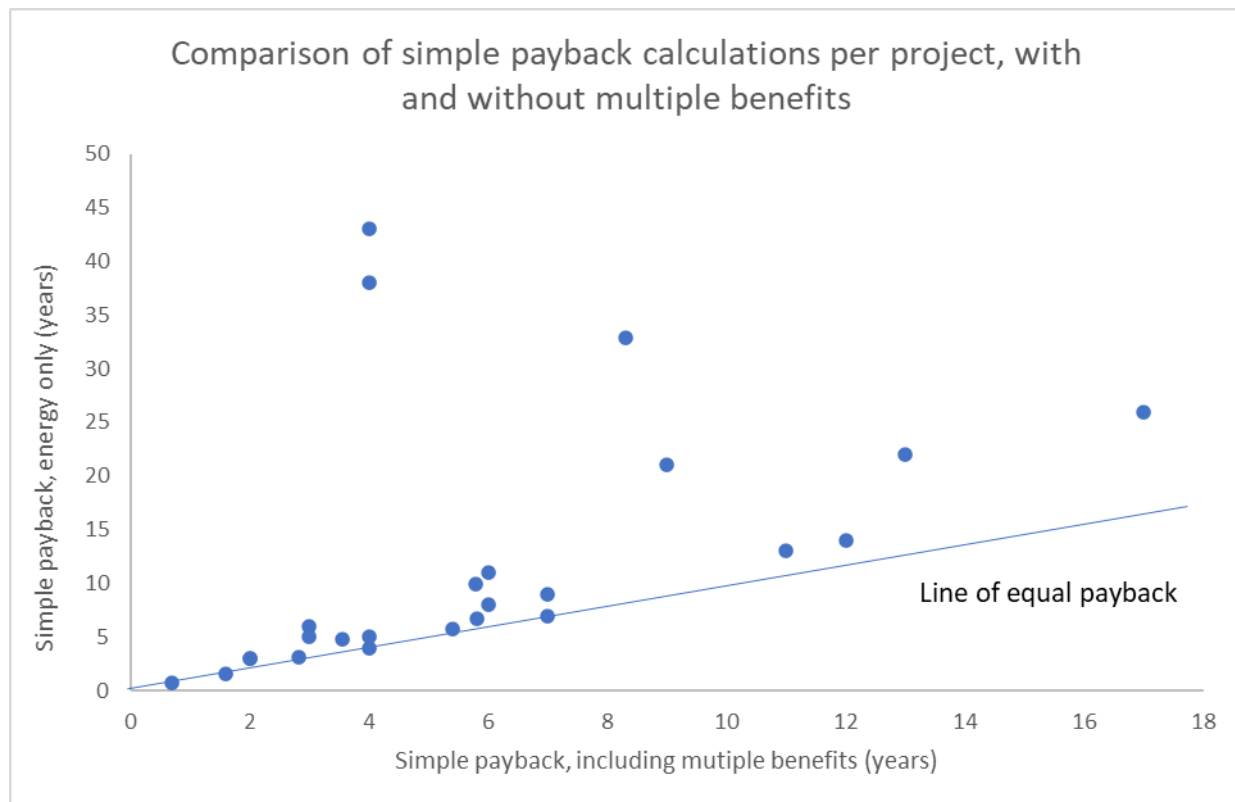


Figure 1: Payback (in years) based on energy savings only plotted against payback where monetised multiple benefits are included

Beyond energy efficiency

Several cases were focused not on energy efficiency, but instead on renewable sources of energy or changing the system of energy provision (changing forklift batteries 6.1.14). This

demonstrates the utility and versatility of the M-BENEFITS methodology as an investment decision tool.

Learning from project partners

Interviews were held with the implementation project partners who had used the M-BENEFITS methodology with companies during the project. The interviews covered the overall experience of the delivery partners in using the M-BENEFITS methodology in order to: a) report the accumulated insights of the delivery partners as the project comes to a close; b) identify possible ways in which the M-BENEFITS methodology could be further developed and improved.

The interviews were undertaken by Gavin Killip and Tina Fawcett (both UOXF), neither of whom were centrally involved in the delivery phase of the project, but both of whom have been involved in WP2 throughout. The interviewees were assisted in the analysis and write-up by Catherine Cooremans (UNIL).

Interviews were carried out between July - September 2021. They were semi-structured, based around the questions listed below. The interviews were recorded, and the conversations transcribed, prior to analysis.

Interview questions

1. Please describe your experience of working with firms and/or energy project before the M-BENEFITS project
2. Please describe in your own words the firms you have worked with using the M-BENEFITS methodology
3. What was your experience of learning and then using the methodology (prompts: initial uncertainty, growing familiarity, ease of application, responses from firms)
4. How well do you think the methodology worked – for you? for the firms you worked with?
5. Are there any particular advantages/disadvantages to the methodology?
6. Can you think of ways to develop or improve the methodology?
7. Is there anything else you wish to say about the methodology or the project?

Input from seven delivery partners (out of a possible eight) was gathered for this report. One person (Christina Hatzialu NTUA) was unavailable for interview but provided written answers to the interview questions, which have been included in the analysis. Five others were interviewed via video-conferencing software:

- Livio DeChicchis (FIRE)
- Joao Fong (ISR, Coimbra)
- Piotr Nowakowski (KAPE)
- Felipe Toro (IREES)
- Reinhard Ungerböck, Graz Energy Agency.

The experiences of Ingo Schneider (Luzern) could not be included because of long-term illness.

The experience of Catherine Cooremans, as a delivery partner undertaking six pilot projects, has not been included here. This is because Catherine has a unique place in the project, as the originator of the ideas which underpin the project, and chief developer of the software and training approaches. Having used earlier iterations of the M-BENEFITS method and software with many firms before this project, she is also in a very different position to all the other delivery partners in terms of familiarity with the tools and the materials.

Quotations from the interviews/written submission are presented anonymously by theme, with a summary and reflection for each theme.

Previous experience of working with organisations

M-BENEFITS delivery partners came to the project with a lot of relevant experience working in energy efficiency. However, the interviewees' experience was broader than conducting audits and engaging with companies at the point of decision-making on a project. The broader experience was in policy development and analysis; coordination of practitioner networks; technology studies and research; consultancy. Most of the interviewees, like most people responsible for energy issues in companies, are engineers, who are not trained in the business management approach and concepts underlying the M-BENEFITS method.

This is why the M-BENEFITS decision support method is accompanied by a training program allowing people with a technical orientation to learn a managerial approach. One element of the training program is a serious game that allows learners to have the feeling of being in a real business practice situation.

“I haven't had much experience in working directly with companies on energy audits.”

“When we are doing energy audits we concentrate on energy efficiency and renewable energy and to calculate effects besides energy costs is very rare. [M-BENEFITS] was different from other projects because normally we don't work ... with large industry. Mostly we work with SMEs and with companies that are linked to a municipality – for instance utility services owned by a municipality.”

“We support companies in the topics of energy efficiency through technical and legislative consultancy. Our core business is not to go inside the companies and to look at their energy processes. The M-BENEFITS project gave us the chance to go inside the company and to know better their processes.”

‘I worked on the Premium Light project, which was on LED lighting, improving the penetration and quality of LED And there I had also some work directly with companies.’

‘[we have] cooperated with numerous firms throughout the last decades, in the frame of EU projects or under individual assignments with firms and companies belonging to the electricity production, iron and steel, cement, ceramic, glass industry sectors among others.’

‘I have been working with several companies mainly on technical aspects of implementation of PV systems.’

For most project partners, M-BENEFITS took them into new areas of activity, either working with companies directly or working with different types of organisations from those they normally work with.

Learning to use the methodology & personal learning

The experience of delivery partners in learning the methodology was broadly very positive. As with any new topic, the learning process was more or less difficult for different people at different times, but all interviewees reflected that the learning experience had been positive and useful. It is important to remember that all the partners interviewed here used the methodology in a maximum of three case studies – so their reflections are from this early stage of familiarity.

“I found it very interesting [and] easy to understand and I found also that the serious game was very helpful and interesting way of learning the methodology and how it works because it's a sort of practical approach.”

“... to identify multiple benefits and to link them to core business was an interesting and innovative topic for us. Especially the serious game – to apply the methodology to the serious game, it was pleasant to... play this game ... but it was really informative because it gave us an input about how to approach ... with real case studies for the pilot project.”

“I have an engineering background. For me all these concepts, like value proposition ... risk assessment ... well, I kind of knew ... we normally think only about the energy benefits when we do our analysis and it was really important for me to see that people in management positions really don't care about this. So, if it's a really low payback, yes, they will be on board ... but if it's longer than two years, for instance, then it's really not interesting.”

“.. thinking from the management perspective is an important gain if you can achieve that in a sustainable way, if it's not only just for this project. It's an important argument in the energy audit business, it could be an added value or USP.”

‘The methodology was adequate and well explained’

The implementation partners felt they had learned valuable new perspectives on energy efficiency investments by being involved in the M-BENEFITS project. The serious game was very effective for their own learning, as well as engaging companies with the approach.

“I think bringing in training sessions that are more based on fun, on interaction, on communication ... it gives a value added, definitely.”

Covid problems

“So it was fairly easy in the beginning to get people on board ... but then we had this Covid situation and so we had to stop everything and by the time we resumed the work people had other things that were more important. So some of them dropped out even though they had already begun the work.... Also because of this Covid situation it is very difficult to make appointments, do visits to the factories or the production facilities.”

Covid adversely affected the ability of partners to undertake work with companies. Covid also meant that project partners did not meet physically in the last 18 months of the project, which limited opportunities for learning and knowledge exchange. This may have led to some misunderstandings about aspects of the toolkit, or how best to make use of it, particularly in these challenging circumstances.

Persuading companies to engage

The job of persuading companies to take part in the project illustrated some of the broader findings of the project – that a switch of mindset is required to engage in this work:

“... for people with engineering backgrounds some of these concepts like strategy and value proposition are not really easy to get across. ... so I would normally give this example that was in the original presentation for a hotel – so we can change the windows for comfort, for energy reasons ... but the priority for the hotel manager is that it is more comfortable for the client and they can get a better TripAdvisor rating, things like that. So ... and people really see [and understand] it.”

In addition, the normal and predictable problems of partner recruitment were also noted, particularly some reluctance among firms who believed that they were already doing what they could on energy efficiency, and who therefore questioned the value of the project to them:

“It was very difficult to get the companies. We actually spent much more budget than we had for that task. We had to call a lot of companies. German companies were very much already advanced in energy efficiency, so they said ‘why do I need this?’”

The recruitment of firms to the pilots seems to have been influenced by the previous experience of the firms and of the delivery partner doing the recruitment. In one case, the previous experience of the delivery partner led to the successful pursuit and recruitment of firms who were interested in projects that fitted the delivery partner's expertise:

"In order to start our methodology we need to have completed an energy audit with selected measures and evaluation of energy savings and economic viability of the project and so on¹. ... That's why we selected companies which were interested in renewable energy because I was personally able to conduct such a feasibility study of the selected projects."

Recruitment of firms is an outcome of a successful negotiation between two parties, who seek to find common interest. It may be impossible to attribute cause and effect in the process: do firms respond positively to an approach that they find persuasive? Or do practitioners seek out the firms who they believe, from past experience, will respond positively? Some elements of both may be in play, as this quote shows:

"By screening potential pilots, it appeared that only companies which wanted to benefit from an energy audit conducted through the project, were mostly interested in taking part and applying the methodology."

Use of real examples and case studies is important, particularly when introducing companies or energy managers to unfamiliar concepts.

Experience of using the methodology

Delivery partners and firms involved in case studies experienced the methodology as a journey of discovery, including moments of confusion and doubt as well as moments of understanding and enjoyment. The process of adapting to the new way of thinking required an effort of thinking and willpower. However, the end result of this learning experience was, on balance, uniformly positive.

"Complicated. Complicated because it is new and not our normal standard. If you do an energy audit you just stick with the energy issues – you don't start with analysis of the business model of the client. It's also not so easy to discuss this with the contact person at the company, they have an expectation of what an energy audit will be, what is included. Talking about the business model and strategic issues is rather new to these people. We proposed we could talk to other people in the company about these issues, but it didn't happen."

"...when we introduce the methodology they [the companies] didn't quite get it at first so we had to give some examples... When we play the game it becomes very clear, particularly the interaction between the different departments within the company and how it is important, not only for energy efficiency but also for the work that is carried out in the company, so the normal work. So this interaction which normally doesn't occur in companies ... and it becomes clear for them that it is interesting that this interaction exists."

"Trying to implement this methodology within the selected companies [which were SMEs] was quite challenging for us... For the very small scale companies it's hard ... to fully do all the steps that we foresee in the methodology."

Question: Was there anything in particular that stands out to you in terms of the innovation of the approach? What was particular or different about it?

"The way to quantify the multiple benefits, so for example, the proposal of indicators to quantify them and the possibility to link them to the core business... because speaking with energy managers many times they say 'yeah, we know that there are multiple

¹ The speaker here is reflecting on the inability to undertake energy efficiency audits in industrial firms, as this is not his area of expertise, not the requirements of the M-BENEFITS tools

benefits, we can identify them but we are not able to evaluate them and to give them a quantitative value.’ The multiple benefits methodology allowed this.”

“It’s well structured. It is easy to explain to people what the steps are... well, it did take a long time ... to get the information ... but then to get it into the Excel sheet was pretty straight-forward. ... if we get the information from the right departments quickly then we get the results also very quickly. ... If we accompany the companies ... then they can see the results also in quite a speedy manner.”

“The advantages are more than the disadvantages. If we have to draw a line and take a sum of the efforts I would say that it was worth making the effort.”

“It’s a good, complex approach. A good approach that has many steps, starting with analysis of the company, not only from the energy perspective, it’s good to have the whole overview, including business. That’s why it’s good to have this business canvas – it’s something new.”

“[you] get additional tools, additional [pairs of] glasses. Like, I put the glasses [on] and I see [things] a bit differently ... and I see ... more elements. I think the methodology is good.”

There was generally a positive experience of using the methodology, although it took some time to learn the steps and to persuade companies of their value. It enabled new conversations to happen with the companies and within the companies themselves. However, in some cases it was not possible to connect with all the relevant people, beyond the energy managers, meaning the methodology could not reach its full potential.

How well do you think the methodology worked in terms of influencing company decisions?

“With the methodology, it didn’t make the difference for a positive decision for investment, not in any [of our] case[s]. Those measures which were implemented would have been implemented anyway, and the ones not implemented, our M-BENEFITS arguments didn’t make the difference....

Interestingly, those measures which were implemented, were not economic only from the energy cost perspective. There were also strategic issues and cost related issues which didn’t have much to do with energy, but more to do with maintenance costs, but also with loans..... It was clear this company is already thinking in multiple benefits terms.... So perhaps front-running companies attended our training, and it was perhaps not necessary to work with them, and we needed to reach different companies? This could be one conclusion from this project.”

“...because the project we were working on was about lighting ... we didn’t have a lot of additional benefits that we could present.² So the interest kind of faded out ..because they didn’t see the additional benefits as being very important In the university it was actually the other way around because it was a project that was done without economic gains. So it was an installation ...with batteries to support the PVs ... so most of the benefits were additional benefits because it’s not at all financially positive. And there it worked better, especially as they saw that it was good for students and it was good for projecting an image of sustainability.”

“They are obligated by the energy efficiency directive, so they have to do some energy efficiency measures they already had some ... like low-hanging fruit like VSDs [variable speed drives]... because of this project they began thinking more about the kinds of benefits that come with VSD ... for the process itself.”

² Here the meaning was that the lighting project was compelling enough without the multiple benefits needing to be presented; not that there are no multiple benefits of lighting (beyond energy cost savings)

“I think the methodology worked in an appropriate way. ... the most important finding is that the methodology gave the possibility to improve the internal communication of the companies.... When we spoke with the companies, with the responsible person, they underlined this as one of the main aspects of the methodology. OK, you can improve the indicators, you can reinforce the proposal with the management – but the main finding was that we were able to speak to each other.”

“[One company] had a policy for three years maximum amortisation times ... or payback time ... and then when we were in the middle of discussing all these projects and in the middle of [the] corona [pandemic] they extended it to seven years. So, they were like ‘Woah, OK!’ But they said ... this strategic analysis was good to show it, but then the whole quantification [issue] became less relevant as the amortisation times were now much longer.”

“The case in the microscale company was fantastic. If we hadn’t had such a methodology we wouldn’t have been able to find out that there were such implications of the energy project. By implementing maintenance-free hot water system, by implementing solar hot water collectors we saved ... the time of very experienced people in manufacturing. Instead of preparing fuel, they could focus on their job which is the priority. It wasn’t a conclusion at the very beginning, but by going through this process, we could put this time into monetary values and quantify it.”

There is mixed evidence on the direct impacts of M-BENEFITS on company decision-making on energy efficiency / renewable energy investments from this sub-sample of cases. In some cases, the non-energy benefits were not significant enough to influence decisions, in others however, they were important. Some companies were already looking at energy efficiency investments through a multiple benefits lens, although without method, in a rather vague and undocumented way, whereas others encountered this thinking for the first time, and benefitted by doing so. In some cases, the real benefit of the methodology was in bringing different parts of the company together to discuss the investment from different perspectives. Changes in the external environment (covid pandemic, policy changes etc) were also influential on company decisions during the running of the project.

It was clear from the outset that it would be difficult to show the impact of the method on companies’ decisions. This is primarily because the decision time of companies is long, often longer than the timescale of research projects. The Covid pandemic also halted many investment decisions.

Challenges of the methodology

“... the social benefits or the company reputation benefits are not so easy to quantify – and we weren’t able to quantify them – this is an issue for the whole quantification of multiple benefits evaluation, not specific to this methodology.”

“what they don't like is if they are not happy with the numbers they get, they don't like to communicate them because it's ... you fear a bit of losing face if there is something wrong.”

“I think that the methodology was well structured, and it’s easy to use. But ... what I found was that it was really difficult to get the people on board so that we can get all the information that we needed so we can get a complete assessment.”

“The thing that for me was more difficult was to get people with an engineering background to see what the ... strategic mindset is. Because what they like to see is numbers in an Excel sheet. and most of these benefits are not quantifiable ... this was my main difficulty.”³

³ Authors’ comment: in fact two-thirds of the non-energy benefits listed in the M-BENEFITS checklist are quantifiable, with guidance on how this can be done. The speaker here may mean that the companies did not have the necessary information to complete the quantification.

“For some of the benefits it’s more difficult to get information. For instance, we had a lot of examples in the final conference where people say ‘... this measure could reduce absenteeism’. But that information is very difficult to get ... so to know how many employees ... if you want to get the numbers down, it’s almost impossible.”

“it is too data intensive ... Like if I have to go and search for all these additional factors and I try to quantify them. [One person] said, ‘I don't know how practical is it for me to apply it again because it takes me a lot of time to put it in’

The key challenges for the method focused around expertise and information. Some non-energy benefits remain very difficult, if not impossible, to quantify. For managers with a technical mindset, they are then difficult to include in decision-making. In addition, information and quantitative data on company issues, could be difficult to collect. All of these issues take time, and lack of time can be a critical problem in its own right. As was shown elsewhere in the project (see D7.3), the amount of time needed to implement the methodology does reduce with increased familiarity. At least some of the time problems experienced in these pilots may be explained by the relative novelty of the methodology for the practitioners involved. The only way to be sure of this would be to build the size and experience of the practitioner community using the methodology, and to evaluate the collective experience as it grows.

Developments or improvements to the methodology

“Perhaps we ourselves just need to get more experienced with the methodology, then the methodology would be easy. If it’s normal to think about strategic issues for a company, if it’s normal to talk to them about this, about risks, if it becomes a normal set of questions in an energy audit, then it might not be necessary to remove any steps from the methodology.”

“Enlarge the perimeter of the methodology – so, go beyond the energy efficiency and include, for example, environmental aspects....water management, [waste]water disposal or technologies to abate CO₂ ... or renewables. Keep the basis of the intervention and take it to some other fields.”

“...the methodology could be a little bit slimmer. Which would probably be necessary if you have smaller companies, lower energy costs, lower turnover and so on – you need a methodology which is a bit more quick and dirty.... Perhaps also its SMEs we need to reach and create a process which is feasible for them.”

“... the software tool needs to be more customized in the future, and based on every pilot individually and differently. To achieve this, the participation of pilot companies as partners in future projects would be an advantage.”

“I have thought ... about how it would be possible to adapt the methodologies for local authorities. The toolkit of M-BENEFITS would have to be altered completely for local authorities, it would even have to be altered for companies owned by municipalities. Their mindset is different from a private company, they have completely different decision-making processes, and what you have to do to receive a positive investment decision.”

This reflexion is not supported by the fact that two successful pilots were carried out with public sector bodies in Switzerland (a university and a local authority). This apparent contradiction may be down to different national contexts, the experience and familiarity of the practitioner with the methodology, or some other factor.

“Probably ... some more flexibility in the methodology because there are some defined steps, defined phases of the methodology, and this is really useful for companies that are not so aware of multiple benefits. So, ... SMEs might need to be guided through each of the steps, but if we go to a company that is already aware, that already knows the topic and can move autonomously – then there is probably more possibility of being flexible.”

“the problem with the serious game is ... we don't have the time, so if we if we want to take three or four hours, or even one day - no way, it's impossible for them ... normally the maximum time they [have for training] is 3 hours. So that was a bit of an issue, but I think as a tool itself I was very happy with it”

“I think the software is very primitive still [...] At the end it is a good excel sheet, but I'm sure it has to be transformed ... to be more client-friendly.”

There is a variety of suggestions of how the methodology could be altered or extended. It could be extended to look at other classes of investment which have multiple benefits. Specific proposals for improving the resources centre on the processes for data collection and analysis. An improved user interface would be worth developing and testing. Difficulties in applying the methodology to different types of organisation may be due to factors other than the methodology itself: different national contexts; the specific circumstances of the organisation in each case.

Legacy of the project

“We need to get this message out that the methodology exists, that it has worked for this number of companies ... and ‘you should do it also’. Because I really think it [the methodology] would be useful to increase the implementation rate of energy efficiency measures ... particularly in large companies”

“... I think this could be implemented successfully in many other companies ... so maybe do an extra effort with maybe energy agencies that are normally more involved with auditing processes and are normally in charge of the energy efficiency directive ... It has potential and it could have a more widespread implementation.”

“...integrating the learning from these research projects into real projects ... is always difficult. I'm the guy doing the European projects, and always have difficulties in bringing this knowledge to my colleagues who are doing the energy audits.”

“My current project is the climate protection plan for the municipality – this is a stakeholder process. ...After finishing this climate protection plan, I have to ... think again about how to bring [learning from] this climate protection plan and M-BENEFITS together.”

“I hope the work ... will not die within the year ... to continue to stay connected about this topic... to collaborate and to exchange in the future, because I think this topic is key for sustainability.”

There are examples of the partners continuing to introduce the methodology to new companies, beyond the scope of the project:

“I'm going to make a workshop [next].. week on multiple benefits and I'm going to present the pilot cases, the methodology and the whole rationale behind it to selected companies that are interested in enlarging their perspective.”

Discussions with policy-makers may also result in action:

“For the final conference.... [we] invited some people from the Ministry that are responsible for energy efficiency in enterprises.... In our discussion [with them]... one of the recommendations for government bodies or decision makers would be to include aspects of this methodology in the scope of energy audits.”

An issue arose late in the project where one partner, Université de Lausanne, claimed unique intellectual property rights of the M-BENEFITS Software. This was seen by some as a serious risk for the legacy of the project:

“What's going to happen? Is it going to become ‘we can all use it’ or is it going to be only remaining with one person - which I don't find correct.”

There are a positive hopes and intentions from the project partners in finding ways to take the learning from M-BENEFITS forwards into future projects and activities.

Final thoughts

“If we ... take a sum of the efforts I would say that it was worth making the effort. The advantages are more than the disadvantages.”

“I think approaching projects in this way ... using this methodology or not ... will be for sure the way that people will do this in the future.”

“In Italy the evaluation of multiple benefits is beginning to be considered also at a policy level ... before the multiple benefits project [people would say] ‘yeah, good, it’s an interesting topic but we can’t translate it at a policy level’. Now ... in the decree for the amended energy efficiency directive an evaluation of multiple benefits is requested in the buildings sector ... Multiple benefits at the project level can also stimulate a translation at the policy level ... We began with theory ... then into practice in the company ... and then the last step is to translate it into a policy level. And we complete our work, I think.”

“We had some remarks from the financial sector, from the Bank of Environmental Protection, that if companies apply for financing, banks respect non-energy benefits as well. This was surprising to me and shows that such holistic analysis and impact on cost savings improves credit -worthiness, and that’s great.”

Project partners see the M-BENEFITS methodology as useful, the way of the future, and multiple benefits beginning to be integrated into policy and business decision-making.

An evolving literature

The latest literature included in report D2.1 was published in 2017. The literature has continued to develop since that time. The project does not have capacity to repeat the rapid evidence assessment exercise, instead selected new publications are noted below, with commentary focused on the implications for M-BENEFITS.

This update identifies a number of significant and relevant new publications on energy efficiency and multiple benefits, which are indexed in the academic literature. Significance is judged based on the novelty of the contribution, the scale of the research, and to a lesser extent, on the authority of the authors. Relevant here means relevant to the M-BENEFITS project – and the papers highlighted are those with new empirical, analytical or theoretical insights which illuminate or challenge our findings.

Wagner, C., Obermeyer, M. & Lüchinger, R. A methodology for the assessment of multiple benefits of industrial energy efficiency measures. *SN Appl. Sci.* 2, 270 (2020).

The principal aim of the multiple benefits (MB) methodology as it is presented here is to facilitate the implementation of energy efficiency measures (EEMs) in industrial settings by providing a standardized methodology, which supports decision-making by considering all effects (i.e., the MB) an EEM has on the different business areas within an organization.

Using their method, they calculated paybacks of EEM in nine cases studies. Overall, a reduction of payback times of 40–85% was achieved through the thorough analysis and inclusion of monetizable MB. The focus is on finding a way to reliably include MB into standard financial analysis of investments.

This paper takes a different approach to MB to M-BENEFITS. It focuses on identification and quantification of MBs and ranks a wide range of benefits in terms of their quantifiability.

Reuter, M., Patel, M.K., Eichhammer, W., Lapillonne, B., Pollier, K., (2020) A comprehensive indicator set for measuring multiple benefits of energy efficiency, Energy Policy, Volume 139, 2020, 111284,

This analysis operates at the level of national indicators, allowing calculation of additional benefits from improvements in energy efficiency. The objective of the paper is to develop a set of indicators that present different aspects of energy savings in a comparable and comprehensive way. The methods should be simple to apply and, if possible, based on data that is easy to obtain. The paper builds on EE indicator analysis of the European countries based on decomposition analysis, as developed within the EU Horizon 2020 project ODYSSEE-MURE.

The authors develop a quantitative indicator approach including 20 indicators to measure the multiple benefits of energy efficiency (MB-EE). The MB-EEs are classified into three groups: environmental (e.g. energy savings, emissions), economic (e.g. GDP, employment), and social (health, energy poverty) aspects.

The methods developed can be applied by policy makers in the design process of energy efficiency policies, thereby allowing to consider the various aspects at an early stage and potentially facilitating the promotion of EE policies.

The analysis in this paper is at a different level from that in M-BENEFITS – nation state rather than firm-level benefits. However, it is relevant as an indicator of increasing policy interest in multiple benefits and their potential wider adoption within decision making.

Bleyl, J. W., Bareit, M., Casas, M.A., Chatterjee, S., Coolen, J., Hulshoff, A., Lohse, R., Mitchell, S., Robertson, M., Ürge-Vorsatz, D. (2019) Office building deep energy retrofit: life cycle cost benefit analyses using cash flow analysis and multiple benefits on project level. Energy Efficiency (2019) 12:261–279

This paper focuses on a very detailed case study. It includes an interesting multiple benefits classification grid (**Fehler! Verweisquelle konnte nicht gefunden werden.**) – which could be of relevance to M-BENEFITS research findings. Its analysis focuses on ‘relevance to business case’ - which is a more restricted understanding of business decision-making than the M-BENEFITS strategic approach. Nevertheless, it is trying to do a similar job – identifying important benefits, quantifying them and putting them in the right language (in this case financial assessment only) for the business decision-maker.

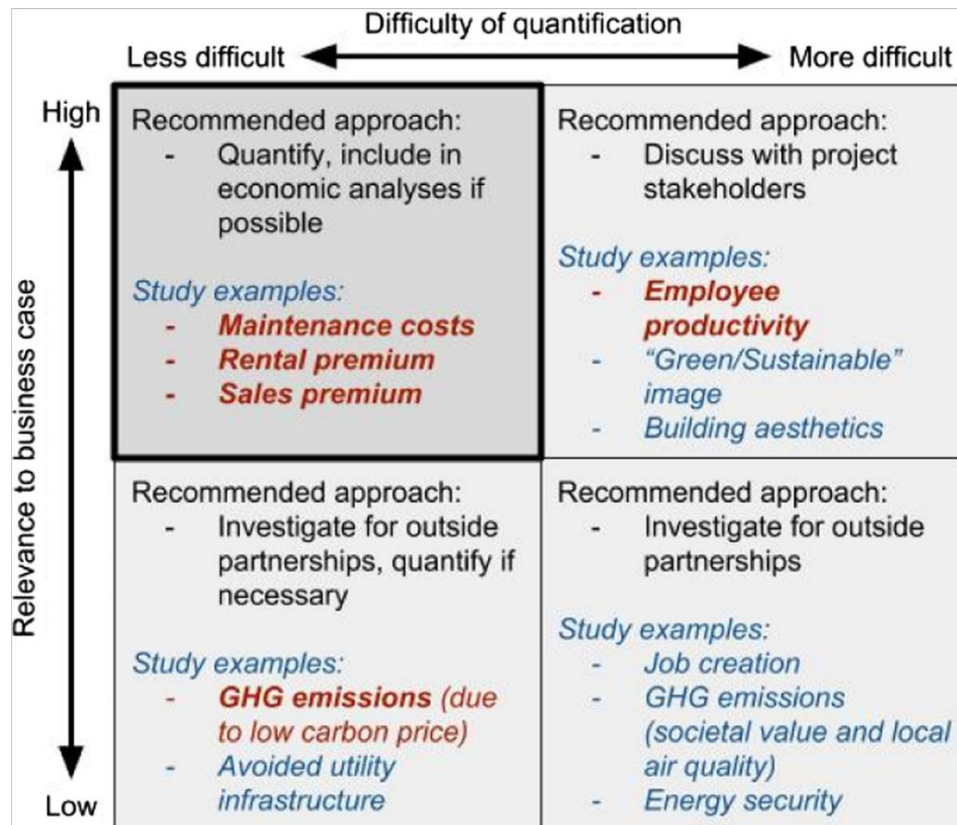


Figure 2: Multiple benefits classification grid (from Bleyl et al, 2019)

There are other frameworks which have also been developed, e.g. Rasmussen (2017) has created a framework to classify NEBs according to their degree of quantifiability (low, medium, high) and their timeframe in which they potentially occur (short term, long term).

Cooremans, C., Schönenberger, A., (2019) Energy management: A key driver of energy-efficiency investment? Journal of Cleaner Production 230:264-275

This paper develops earlier work by Catherine Cooremans, which forms the intellectual basis for M-BENEFITS. It reports results from the M-Key ('Management as a key driver of energy performance') project on looking at energy efficiency investment in the industrial and commercial sectors. The project aimed to better understand how large-scale energy consumer (LSEC) companies make energy-efficiency investment decisions.

The analysis was based on literature review and extensive empirical data. The data comprise 305 valid responses from a questionnaire distributed to 3600 LSEC companies, 27 interviews with company managers in charge of energy issues and finally five case studies out of the 27 companies interviewed.

One aspect of the research concerned non-energy benefits (NEBs). Via the questionnaire, companies were provided a list of 31 potential NEBs to choose from. Two hundred thirty-six firms answered the question; on average, a firm considers 9 to 10 non-energy benefits. The highest score was obtained by "Reduction of maintenance cost and technical control of equipment" entailed by energy-efficiency investment (selected by 133 companies out of the 305 having answered the questionnaire), followed by "Better corporate image" (115 companies). "Enhanced security and better working conditions for the staff" comes in third position (113 companies) and "Lower CO₂ tax or tax exemption" in fourth position (110 companies).

The authors concluded that non-energy benefits can be more important than energy benefits in convincing the management to invest in energy efficiency.

Overall findings were that when energy efficiency is perceived as strategic, companies tend to have a high level of energy management. The better the energy management system is, the more likely the chances are for a positive decision on energy-efficiency investment. Another important conclusion is that the more strategic a project or investment is considered to be, the less restrictive are the financial criteria applied.

These findings confirm the dominant influence of strategic logic –as opposed to financial logic–on investment decisions-making and adds to evidence for the conceptual underpinnings of the M-BENEFITS project.

Nehler, T. (2018) Linking energy efficiency measures in industrial compressed air systems with non-energy benefits – A review, *Renewable and Sustainable Energy Reviews*, 89: 72-87

This paper aims to provide an academic perspective on energy efficiency in compressed air systems by reviewing the scientific literature in the area of energy efficiency in industrial compressed air systems including the perspective of the non-energy benefits. The second part of this study's objective consists of studying the specific non-energy benefits as an outcome of realised energy efficiency compressed air measures.

The results from reviewing the body of literature on non-energy benefits indicates that the studies on observed non-energy benefits of energy efficiency measures in compressed air systems, and of specific energy efficiency measures, in particular, are few.

Even if previous studies have observed various types of non-energy benefits of industrially implemented energy efficiency measures, most have addressed them as an outcome of energy efficiency in general; or, from another perspective, they have observed and reported on the non-energy benefits of specific measures as one entity. Nehler illustrates the different levels at which NEBs can arise (**Fehler! Verweisquelle konnte nicht gefunden werden.**).

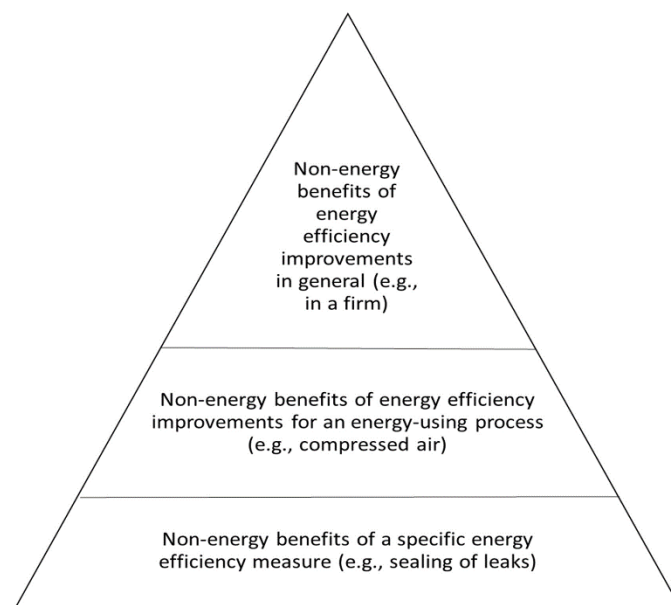


Figure 3: Non-energy benefits divided according to level of energy efficiency measures. (Nehler, 2018)

The detailed work in this paper highlights the paucity of data on NEBs in general, and from more energy efficient compressed air systems in particular. This paper does not attempt an

analysis focused on strategicity - as per M-BENEFITS. However, as well as providing detailed analysis of a specific set of EE measures, it also introduces a stratification of MBs which may be of use in considering M-BENEFITS' results.

Johansson, I., Thollander, P. (2019) Non-energy benefits in energy audit and energy efficiency network policy programs for industrial SMEs. ECEEE Summer Study, Pres que Ile de Giens, France.

The aim of this study was to identify and compare non-energy benefits (NEBs) from two key energy efficiency policies: energy audit and energy efficiency network programs.

The most commonly mentioned NEBs were related to production, such as increased lifetime of equipment and more reliable production. However, while participants from the energy audit program related these NEBs mainly to technical installations, network participants also saw these types of NEBs from energy management practices. If NEBs were to be included in energy audit programs the benefit of the audits could be increased.

This links to issues of whether and how the results of M-BENEFITS could be spread by including its tools into standard audits and other policy initiatives.

Shnapp, S., Paci, D. and Bertoldi, P., (2020) Untapping multiple benefits: hidden values in environmental and building policies, EUR 30280 EN, Publications Office of the European Union, Luxembourg.

This report provides the European Commission, the national administrations in charge of implementing EU energy efficiency policies in Member States and other decision makers seeking to include multiple benefits in their policies, building programmes and financial programmes with:

- Information on identified benefits;
- A methodology for an enhanced consideration of wider benefits, in particular in the calculation of cost-optimal minimum energy performance requirements under the Energy Performance of Buildings Directive; and
- A toolkit to calculate and quantify / measure the monetary value of these impacts, from a policy and investor standpoint.

Policy making in the area of energy efficiency is very much focused on energy savings, however, the authors hope that this report will be used as a first step towards a concerted action to ensure that multiple benefits of energy efficiency are widely acknowledged and considered in important policy decision-making.

The focus is different from that in M-BENEFITS and the role multiple benefits can play in decision-making is understood in a more limited way, with energy-focused cost benefit calculations remaining at the heart of policy making. However, if successful in integrating multiple benefits into policy making, this report will help change thinking about multiple benefits more widely.

Mallaburn, P., Azhari, R., Fawcett, T. and Topouzi, M., (2021) Australian non-domestic buildings policy as an international exemplar. *Buildings and Cities*, 2(1), pp.318–335.

This paper analyses experience with the NABERS building energy rating system in Australia, based on stakeholder interviews and analysis of quantitative data. It judges that this policy has led to transformation of the market for higher quality office buildings towards greater energy efficiency.

The findings note the importance of the building rating system being designed so that people who are important in delivering more energy efficiency (building managers) were

targeted and the right levers and metrics were in place. The importance of detailed attention being paid to key-decision makers echoes the approach underlying M-BENEFITS.

More specifically, the multiple benefits of more efficient buildings, particularly the positive influence on corporate reputation, was shown to be key in response to NABERS. Energy efficiency was shown to deliver important business benefits, and hence was valued by decision-makers.

Kamal, A, Al-Ghamdi, S.G., Koc, M. (2019) Revaluating the costs and benefits of energy efficiency: A systematic review, *Energy Research & Social Science* 54:68-84.

A systematic literature review (based on search strings for energy efficiency, cost, benefit, opportunity, multiple benefits and rebound) identified seven new multiple benefits compared with the 15 identified in the landmark 2014 IEA report 'Capturing the Multiple Benefits of Energy Efficiency'. Analysis of the different studies showed that, on average, only six of the 22 possible multiple benefits were quantified/monetised in these studies, leading to the strong possibility that the scale and importance of multiple benefits is being under-estimated. Rebound effects are included – and considered to be either a cost or a benefit, depending on the particular case.

A technique is demonstrated for visualising the extent of analysis in any given study, so that the scope of analysis can be seen at a glance and studies can be easily compared.

The systematic under-estimation of multiple benefits of energy efficiency could help explain why investment decisions continue to be biased towards new energy supply investments rather than investments on the demand side. The case for energy efficiency is typically incomplete, and could be improved by taking fuller account of multiple benefits.

Thema, J., Suerkemper, F., Couder, J., Mzavanadze, N., Chatterjee, S., Tubler, J., Thomas, S., Ürge-Vorsatz, Hansen, M.B., Bouzarovski, S., Rasch, J., Wilke, S. (2019) The Multiple Benefits of the 2030 Energy Efficiency Potential, *Energies* 12(14):2798-2817.

An output of the COMBI project ('Calculating and Operationalising the Multiple Benefits of Energy Efficiency in Europe'), this paper describes new methods for quantifying multiple benefits of energy efficiency from a broad societal perspective, with a focus on policy-level analysis of the impacts of investment decisions. It considers a total of 21 energy efficiency improvement actions across the buildings, transport and industrial sectors.

A set of impact indicators and quantification methodologies is described for five broad categories of impact/benefit: air pollution, material resource use, social welfare, economy, energy system. A step-by-step process allows different types of impact to be compared through monetisation. The risk of double-counting means that some impacts are excluded (on a precautionary principle) and further work is needed to evaluate the extent to which double-counting can be quantified, and then allowed for, in each different class of impact and quantification method.

It was found that monetisation was possible for 17 out of 30 impacts identified. Three classes of impact showed the largest scale of benefits from energy efficiency by this method: macro-economic benefits, impacts on the energy system, and impacts related to material resource use.

A conservative estimate suggests that monetisable benefits represent an extra 50-70% of savings on top of the total energy cost savings. In some sectors (eg residential building efficiency) are far higher, with the multiple benefits being more than double the energy cost savings.

Overall lessons from the new literature

The literature on multiple benefits continues to develop, although the number of published papers is still fairly modest (an observation also supported by Nehler, 2018). Analysis of multiple benefits for the purposes of policy-making still dominates in the literature, and positive steps are being taken to improve the sophistication and scope of techniques for monetisation. At the same time, there are some signs of increasing interest in looking at multiple benefits at the level of the firm, and in the importance of the firm's priorities in relation to whether non energy benefits affect investment decision making. Different frameworks for understanding company decision-making exist and are being developed: the strategicity approach of M-BENEFITS is far from universal (e.g. Bleyl et al, 2019). However, there is additional research supporting the evidence and theory from which M-BENEFITS has been developed (particularly Cooremans and Schönerberger, 2019).

Key lessons

Multiple benefits are here to stay

The literature and research on multiple benefits has developed since the idea started to gather interest in the 1990s; it is an idea which is here to stay. There are efforts to include multiple benefits in EU policy-making, and a variety of approaches to identifying, quantifying and making these benefits salient at the organisational scale. As companies face the challenge of decarbonizing their operations, a multiple benefits approach which links with core business values can enable them to do so successfully.

Innovative approaches to training are valuable

A key part of training in M-BENEFITS was the development of a 'serious game' – an unusual and imaginative approach (see Appendix 1 for a fuller description). This worked very well in educating and enthusing both project partners and case study companies. For several project partners, the M-BENEFITS project took them into new areas of activity, either working with companies directly or working with different types of organisations from those they normally work with. The training materials enabled them to do this successfully.

M-BENEFITS methodology and tools were generally well received

There was generally a positive experience of using the M-BENEFITS methodology and tools, although it took some time to learn the steps and to persuade companies of their value. It allowed new conversations to happen with the companies and within the companies themselves (between the technical functions themselves -operations and energy people- and between the technical and managerial functions).

The importance of non-energy benefits varied hugely by project

The quantifiable non-energy benefits compared with energy saving benefits, varied hugely as demonstrated in Figure 1. In some cases they vastly outweighed energy savings, in others they were minor. The Covid restrictions faced by the partners meant that the ability to identify and choose the most suitable case studies was severely limited.

The key challenges for the methodology focused around expertise and information

Some non-energy benefits remain very difficult, if not impossible, to quantify. For managers with a quantitative mindset, they are then difficult to include in decision-making. In addition, collecting information on company strategy and financial issues, as well as standard energy audit information, was difficult in some cases.

This was not due to an intrinsic impossibility of quantification, but to a lack of data in the company (for example, data on absenteeism at work are often non-existent, even in large companies). However, these shortcomings can be compensated for by assumptions in many cases.

There was mixed success in influencing company investment decision-making

In some cases, the non-energy benefits were not significant enough to influence decisions, in others however, they were important. In yet other cases, decisions were made outside the timescale of the project. It was not always possible to connect with all the relevant people, beyond the energy managers, meaning the methodology could not reach its full potential. Some companies were already looking at energy efficiency investments through a multiple benefits lens, although not necessarily in a systematic way, whereas others encountered this thinking for the first time, and benefitted by doing so. For some, the real benefit of the methodology was in bringing different parts of the company together to discuss the investment from different perspectives

The M-BENEFITS approach could be extended to other sectors and environmental issues

The methodology and tools could be extended to look at other classes of investment which have multiple benefits. It could be altered to suit the needs of SMEs or local authorities / local authority owned businesses, who have different decision-making processes and priorities. However, the method is not intended for micro enterprises or small SMEs with low consumption.

Integrating new ideas into established approaches is important, but challenging

For the M-BENEFITS approach to become widespread, it needs to supplement standard energy audits. This project has not looked at policy mechanisms for doing this, but has demonstrated the value of this approach. To date, the M-BENEFITS approach has sought to transform the working practices of energy experts in order to give them tools for contributing to firms' business models, based on a cross-cutting analysis of the operational, strategic and financial impacts of energy-efficiency projects. A different approach is conceivable – in which business advisers and consultants (those who are called in by firms to advise on strategic decisions) could be trained to identify opportunities for energy efficiency.

Energy efficiency investment can be increased by focusing on wider business priorities not just energy cost savings

Within the energy community, energy is the primary topic of concern and discussion. Questions of energy savings (physical and monetary savings) tend to dominate. However, outside the energy community, there are many other things that are more salient to the decision-maker than energy. The challenge for the energy community lies in grasping this new mindset and realising that core business issues are much more important than energy savings issues in the operation of firms. The salient questions vary from firm to firm, and from decision-maker to decision-maker, because competitiveness is based on key success factors that differ from one sector of activity to another and from one company to another, as well as on the perception of the decision maker.

In some cases, conventional benefit-cost analysis may be salient to firms, but in many cases it is not sufficiently motivating to affect decisions. The M-BENEFITS methodology provides a way of identifying what is most salient to the decision-maker, and using the co-benefits of energy efficiency to present investment options in terms that are valued by the decision-maker. Energy efficiency need not be the primary reason for investment. Energy efficiency is often a secondary benefit of other, more salient factors.

Conclusions

M-BENEFITS has been a successful project, involving partners and companies across Europe in developing, trialling and benefiting from a new toolkit which facilitates better business investment decisions. By identifying the multiple benefits of energy efficiency investments, understanding where these link with the strategic priorities of individual businesses, and communicating this effectively to senior managers, better decisions can be made both for the business and for the environment.

The toolkit is comprised of:

- Both business and energy efficiency opportunity analysis methods, embedded in software
- Training programme and educational materials
- Knowledge base of case studies of application of the M-BENEFITS approach

The M-BENEFITS methodology has been well received by firms and the practitioner project partners who worked with them. This is because the M-BENEFITS toolkit provides a rich, evidence-based and well-documented approach to answering important questions about which energy efficiency measures businesses should adopt. It also improves communication within companies, particularly between the technical experts and senior managers who make business decisions. Using the M-BENEFITS approach improved the quality of practitioners' engagement with firms.

However, there were some challenges. It took time and effort for partners to become familiar with the M-BENEFITS software (which was in early development and improved during the project). Partners with engineering expertise were initially unfamiliar with the business and management concepts underpinning the analysis included in the software. When using the tools with companies, data to support quantifying non-energy benefits (e.g. reducing staff absence) was not always available at firm-level, making quantification of key benefits difficult.

More generally, the pandemic made recruitment of and communication with firms as well as communication within the project team less good than in normal times.

Project partners have identified ways in which the M-BENEFITS approach could be improved and extended. The analysis could be expanded to domains beyond energy efficiency, e.g. renewable energy, water and waste management. It could also be adjusted for use with local authorities, and potentially adapted for use with smaller firms.

The M-BENEFITS software has been continuously improved: the project partners were trained using version 15 – the current version is number 28. This process will continue.

Increasing the number of documented case studies will be important – these are a key learning and communication resource.

Most project partners have expressed their intention and plans for taking the learning from M-BENEFITS forwards into future projects and activities. Beyond this, there are plans to continue to improve the toolkit and to train more practitioners in its use. Partners will continue to communicate key messages from the project to policy makers and opinion formers throughout Europe.

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Appendix 1: The M-BENEFITS Serious Game

The M-BENEFITS serious game is an educational tool, used for training purposes during workshops, webinars or online courses. It is a deliverable of the EU project M-BENEFITS (task 4.4 of Work Package 4 “Toolkit Development”).

The serious game M-BENEFITS is a simulation game, i.e. a game which produce a simplified, but realistic representation of a real-world complex system. Participants can thus “live” situations. As they play in a virtual environment, they have the opportunity to

manage complex problems, make mistakes and learn from these experiences. Serious games allow players to directly apply any theoretical framework in a fun and unconstrained way.

The serious game M-BENEFITS has been used many times for the past two years, in the classroom or in virtual sessions, in several European countries and in the US and Canada, to the satisfaction of the participants.

The development of the game was guided by a search for consistency between the M-BENEFITS method and the activities within the serious game. On the other hand, the mechanisms and interfaces of the Serious Game have been developed taking into account its future use by multiple trainers in different countries.

The University of Lausanne (UNIL) provided the content of the serious game: a description of the company, its managers, management system and business model; texts of the interactions between the managers and the player (questions and tasks to perform); stages of the game; all documents provided to the player, including an energy audit. The content is based on the M-BENEFITS analytical framework developed and on the information given – on condition of anonymity – by a real industrial company.

The real case study was adapted to best serve the training objectives of the serious game, which are to get the participants to: 1) understand the importance of non-energy benefits to increase the attractiveness of energy & carbon projects for business leaders; 2) apply the M-BENEFITS methodology to identify, value and communicate these benefits.

Haute Ecole d'Ingénierie et de Gestion du canton de Vaud (HEIG-VD, a university of applied sciences of the Swiss HES-SO network) was responsible for the development of the Serious Game content integration and gamification, in collaboration with UNIL. The Serious Game is developed with the open-source environment Wegas.

Training participants join the serious game through online access. They form teams of 3-5 players, which take on the role of a newly hired energy manager in a canned food production company.

The objective of each team is to identify the two most relevant energy-efficiency measures (out of six described) for Pickles company. While playing the serious game, players can virtually meet different managers of the company (e.g. general manager, HR manager, financial manager, sales director) and ask them questions. At the end of the game, players, in the role of the energy manager, prepare a real presentation of their project (outside the software simulation) for the internal project selection committee in order to get their energy & carbon measures approved. The presentation is made based on a template provided by the Game.