



D2.3 Energy audits market overview and main barriers to SMEs

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Executive Summary

This report, published as part of the Horizon 2020 LEAP4SME project, examines the barriers that exist for small and medium sized enterprises across Europe, in carrying out energy audits and implementing the recommended energy efficiency improvements or renewable energy installations.

The objective of the report is to identify and understand the barriers preventing SMEs from accessing the benefits of energy audits and why they occur. After gathering learnings from good examples of how barriers to accessing audits have been overcome, the authors have concluded the report with a set of recommendations for future SME support programmes.

A total of 17 barriers were identified through a desk-based review of relevant literature, as well as interviews with senior stakeholders from the National Energy Agencies partner of LEAP4SME (AEA, EIHP, CRES, ENEA, EWA, KAPE, ADENE, SEIA and EST) and from qualitative data gathered through a survey and workshops with the Agencies' representatives.

The barriers identified have been categorised into those relating to financing issues, issues which relate to how support programmes and the audit process itself is designed, and, finally, organisational issues within the SME. Some can be viewed as energy barriers while others are non-energy related.

The findings showed that the impact these barriers have on SMEs can differ depending on their size. Smaller SMEs may have fewer financial reserves to invest in energy efficiency measures, whereas larger SMEs may have more complicated approval processes and be more reluctant to make investments to improve their energy performance.

The barriers also impact the various business sectors in different ways. Factors such as the proportion of energy costs of total business outgoings, lack of ownership of facilities in which the business activity is performed will vary significantly between businesses in different sectors. Manufacturing businesses which need premises to house industrial processes may be more likely to own their premises than office or retail businesses.

After identifying the set of key barriers and reviewing the learnings from best practices examples of when SMEs have been supported to overcome barriers, the report concludes

with some key recommendations, which should be considered when designing and implementing policies to support SMEs with accessing audits and energy efficiency improvements:

- Develop strategies to meaningfully engage with SMEs to raise awareness of energy audits, by emphasizing both the energy-related and non-energy related benefits to the business.
- Encourage strong networks of local government representatives, SMEs and auditors which can strengthen programmes by identifying barriers and providing place-specific solutions.
- Require stronger standards for auditors working with SMEs and set minimum quality standards for the audit and its outputs, which use clear language, present data in a visually engaging way and contain actionable recommendations.
- Link audits to holistic support programmes, which guide SMEs through the entire journey from understanding what energy improvements can be made to accessing financing and completing the installations.
- Provide long-term policies and support programmes that ensure stability and give SMEs the confidence to invest in measures that may have long payback periods.

1 Introduction

Every EU Member State has implemented policies to promote energy audits, energy efficiency, and the use of renewable energy in small and medium sized enterprises (SMEs). These policies may be specifically targeted at SMEs, or they may be targeting businesses of all sizes. They may focus support on businesses in specific sectors or regions or apply to all sectors on a national scale. The policy objective may be only to achieve energy or carbon savings, or there may be wider policy objectives such as capacity building for SMEs.

In a previous LEAP4SME report¹, the findings of research by the project partners into the policy instruments available in their countries (Austria, Croatia, Greece, Italy, Malta, Poland, Portugal, Slovakia, and United Kingdom) and across EU Member States were presented. This report builds on that work to present an analysis of the energy audit market across Europe, its players, and the main barriers to auditing SMEs.

Energy and non-energy barriers have been investigated through published reports and insights contributed by all partner agencies, representing a good sample of nine countries. A preliminary analysis of best practice examples of successful SME audit programmes and possible trigger points - namely any events of change or renovation work that would prompt an SME to consider energy improvements – has also been carried out. Taking learnings from the research data and the best practices, the report concludes with a set of recommendations for future support programmes on how the barriers identified can be overcome.

1.1 Objectives of the LEAP4SME project

LEAP4SME aims to improve the national and local policies in place to encourage SMEs to undertake energy audits and implement the recommended energy-saving measures. As a first stage the existing policies and programmes have been mapped and their strengths and weaknesses identified. The project aims to overcome the barriers to SMEs in taking up energy

¹ LEAP4SME Deliverable 2.2 (2021) “Existing support measures for energy audits and energy efficiency in SMEs” <https://leap4sme.eu/wp-content/uploads/2021/07/LEAP4SME-D2.2-Mapping-SME-energy-policies-in-Europe.pdf>

audits and will offer a series of replicable recommendations applicable to SMEs across the project partner countries and the EU more widely.

Throughout the project, interaction with a range of stakeholders by means of workshops, questionnaires, and meetings, is a key focus of the work. Through these outward engagements project partners will look to build the capacity of, and disseminate project findings to, policymakers and relevant stakeholders at the European, national, and regional levels.

1.2 Definition of SMEs

An SME is defined by the European Commission² as an enterprise which employs fewer than 250 persons and which has an annual turnover not exceeding €50 million, and/or an annual balance sheet total not exceeding €43 million. SMEs can be either:

- micro enterprises (employing < 10 persons)
- small enterprises (employing between ≥ 10 and < 50 persons)
- medium enterprises (employing between ≥ 50 and < 250 persons)

Europe's 25 million SMEs represent 99% of European businesses and are the backbone of the EU economy. They employ around 100 million people³, account for more than half of Europe's GDP and provide two out of three jobs. Almost a quarter⁴ of SMEs in Europe already enable the energy transition by offering green products or services.

We note recent work⁵ undertaken around the definition of SMEs as it relates to Article 8 of the Energy Efficiency Directive and particularly around the question of which organisations should be expected to undertake audits. Although these are important considerations, in this report we have adhered to the existing formal definition of SME outlined above.

² Title I of the Annex to Commission Recommendation 2003/361/EC and Article 2(26) of the Energy Efficiency Directive

³ https://ec.europa.eu/growth/smes_en

⁴ 2017 Eurobarometer on SMEs, resource efficiency and green markets

⁵ <https://op.europa.eu/en/publication-detail/-/publication/fba03290-aedc-11eb-9767-01aa75ed71a1/language-en>

1.3 Definition of Energy Audit

The Energy Efficiency Directive defines an energy audit as, “a systematic procedure with the purpose of obtaining adequate knowledge of the existing energy consumption profile of a building or group of buildings, an industrial or commercial operation or installation or a private or public service, identifying and quantifying cost-effective energy savings opportunities, and reporting the findings;”⁶

National governments are required to establish minimum criteria for the energy audits referred to in Article 8 of the Directive. These should be based on guidelines set in Annex 6 of the Directive, which reads as follows:

Audits should:

(a) be based on up to date, measured, traceable operational data on energy consumption and (for electricity) load profiles;

(b) comprise a detailed review of the energy consumption profile of buildings or groups of buildings, industrial operations or installations, including transportation;

(c) build, whenever possible, on life-cycle cost analysis (LCCA) instead of Simple Payback Periods (SPP) in order to take account of long-term savings, residual values of long-term investments and discount rates;

(d) be proportionate, and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of the most significant opportunities for improvement.

Energy audits shall allow detailed and validated calculations for the proposed measures so as to provide clear information on potential savings.

*The data used in energy audits shall be storable for historical analysis and tracking performance.*⁷

⁶ Article 2 of Directive 2012/27/EU of the European Parliament and of the Council Consolidated TEXT: 32012L0027 — EN — 01.01.2021 (europa.eu)

⁷ Ibid Annex VI

For large enterprises, under Article 8, governments should ensure that the companies undertake audits meeting these guidelines at least every four years.⁸ For SMEs there is no such mandatory requirement, though Member states shall “Develop programmes to encourage SMEs to undergo energy audits [*meeting these guidelines*].”

The EN standard for energy audits, EN-16247 provides the basis for the International Standard ISO 50002 for energy audits. Energy audits are defined in ISO 50002 as the “systematic analysis of energy use and energy consumption within a defined *energy audit scope*, in order to identify, quantify and report on the opportunities for improved energy performance⁹. The energy audit scope is defined as the “extent of energy uses and related activities to be included in the energy audit, as defined by the organization in consultation with the energy auditor, which can include several boundaries”.¹⁰

ISO 50002 and EN 16247 can be used within the overarching ISO 50001 standard for energy management systems, particularly to provide an audit trail for the energy review required for companies to meet the ISO 50001 standard.¹¹

For the purposes of this report an “SME energy audit” can be understood principally as referring to audits covering energy end uses on a single SME site (which may consist of multiple buildings, a single building, or a unit in a building) OR in a single SME business building.¹² The audit may be delivered in line with the requirements set in Article 8 and Annex VI of the EED , ISO 50002 or EN-16247, or rules set within national programmes.

Energy audits may cover building, process, or transport energy use (see Section 3.1). Energy Performance Certificates (EPCs) are a specific type of building energy audit required – under the Energy Performance in Buildings Directive – to be provided at point of property sale or rental.

⁸ Ibid Article 8, Para 4: the audit may be undertaken in the context of an Environmental Management System (Para 6)

⁹ [ISO 50002:2014\(en\), Energy audits — Requirements with guidance for use](#)

¹⁰ *ibid*

¹¹ [What are the ISO 50001 Family of Standards? | NQA](#)

¹² For SMEs with multiple sites the Italian Article 8 energy audit procedure provides guidance on clustering and sampling of sites; this is explained (in English) at [GUIDELINES FOR ENERGY AUDITS UNDER ARTICLE 8 OF THE EED: ITALY’S IMPLEMENTATION PRACTICES AND TOOLS \(enea.it\) P.6](#)

1.4 Who is this report for and how should it be used?

This report is targeted at policy makers at all levels (e.g., European Commission and national governments of Member States) and policy implementers (e.g., energy agencies, ministries, local authorities, or regional governments), companies involved in the energy services sector, and others working with SMEs. The report should be used as a guide to the energy audit market, the barriers and benefits to SMEs in adopting energy audits and energy efficiency.

2 Methodology

2.1 Policy mapping and barriers data collection

In the previous LEAP4SME report titled “Existing support measures for energy audits and energy efficiency in SMEs”, the project partners conducted an exercise to research, review, discuss and categorise energy efficiency and audit related policy instruments or support programmes in their countries. This exercise included collecting data on the barriers faced by SMEs or policy implementers associated with each of the policy instruments identified (where information was available).

To assist with data collection, Energy Saving Trust prepared a matrix for each of the LEAP4SME project partners to fill with the results of the literature search for their country. This helped to direct the search and to collate the information into a uniform format. Data from websites and available evaluation reports regarding SME policies and support programmes was gathered for each of the partner countries. Following an initial analysis of the data collected, partners had the opportunity to extend the literature review and were able to provide further clarification or additional policy instruments for review.

There were certain limitations in the data collection and analysis which are worth noting. As a large number of policy instruments identified are still active, there was a general lack of published information around barriers (amongst other categories of information), as this information would typically be made available when programmes finish and undergo an evaluation. As such, interviews and workshops with stakeholders from national agencies were carried out as a means to collecting as much data as possible.

2.2 Literature review

A comprehensive desk-based review of relevant literature was conducted to gather reports, articles, and papers that document barriers and benefits to SMEs engaging with energy efficiency measures and energy audits. A matrix of over 30 documents from across Europe from a range of institutions, governments and organisations was created and reviewed to

extract key insights around energy and non-energy barriers. The information gathered was also used to support the input provided from other data sources, such as the two workshops on SME barriers (see section 2.4) and data previously collected from project partners.

2.3 Interviews with senior stakeholders

It was determined that another useful source of opinions on barriers to SMEs were senior leaders from the different LEAP4SME partner Authorities. A briefing note for partners was prepared, providing the proposed interviewee with details of the LEAP4SME project's aims and objectives and the questions which would be asked in the interview, allowing them time to prepare responses. Members of the LEAP4SME partners' project teams then conducted interviews with their senior leaders, including positions such as: President of the Agency (CRES), Head of Programmes and Initiatives (ADENE), Chief Executive Officer (EST), Head of Energy Efficiency (EIHP), Senior Experts (AEA), Senior Leaders (EWA), Head of National Energy Efficiency Agency (ENEA), Senior Energy Efficiency Expert/Managing Director (KAPE), Director of Innovation and International Cooperation (SIEA) amongst others.

The following questions were asked during the interviews:

- 1) What do you think is the most important barrier(s) to SMEs adopting energy audits and energy efficiency measures?
- 2) What do you think are likely to be the most important support mechanisms for SMEs in adopting energy audits and energy efficiency measures?
- 3) What would your key message be to stakeholders/market players who are working with SMEs on energy efficiency?
- 4) What is your view on how the LEAP4SME project can contribute to progress in the sector?

Insights from the interviews are discussed in sections 4 and 5 of this report.

2.4 LEAP4SME National Energy Agencies workshops

To gather further qualitative data, a series of workshops were conducted with the LEAP4SME partners, offering the chance to discuss and share learning on the benefits of energy audits and barriers to SMEs in adopting them. Partners were tasked with providing a short presentation on a best practice energy audit programme, investigating the delivery model, integration with policies, innovative features and strengths and weaknesses of the audits. A subsequent group discussion delved deeper into the topics, guided by the following questions:

- What are the key barriers to energy efficiency in SMEs that audits can help overcome?
- How do best practices overcome these barriers?
- How could energy audits develop in future: what ideas for new approaches for energy audits do people have?
- What are the limitations of energy audits?

The workshops were a valuable source of information and sparked a lot of interesting discussions, which will be highlighted in sections 4 and 5.

3 The European energy audit and energy efficiency market for SMEs

To fully understand the barriers that SMEs face in accessing audits - and the benefits of any subsequent energy efficiency improvements - it is important to understand the current energy audit market across Europe. The following section gives an overview of the types of energy audit that are available to SMEs, as well as the trigger points - which are events or periods when SMEs are more likely to consider having an energy audit. This section also discusses the main market stakeholder groups relevant to SMEs and concludes with remarks on the future direction of the energy audit market. The information in this section is based on available published literature and the data gathered through the workshops and interviews with project partners.

3.1 Review of different models of energy audit

3.1.1 Level of complexity and detail

ISO 50002 (see section 1.3 above) defines audits at three levels of complexity¹³. Broadly these can be defined as:

- Level 1 audits covering broad identification of energy saving opportunities including low cost/no cost opportunities and a rapid assessment of the cost benefit of identified potential improvements;
- Level 2 audits covering more detailed assessment of energy use data, and a focus on assessing the business case in detail;
- Level 3 audits (investment grade) that cover detailed analysis of specific energy using equipment or sub-systems in order to provide the detailed view for planning capital intensive investment.

¹³ The American ASHRAE standard for energy audits similarly takes this three-level approach.

Time, expertise, and cost requirements are likely to rise with the level of complexity of the assessment.

Digitalisation and smart metering are making off-site and rapid assessments (particularly at ISO 50002 Level 1) increasingly viable. For example, a new “virtual energy audit” from British Gas Business, an energy supplier in the UK, relies on the auditor directing an SME staff member through a dedicated mobile phone app and digital camera to gather data from a site for an initial audit.¹⁴

3.1.2 Types of energy end-uses included in the audit

EN-16247 defines three types of energy end-uses that can be covered in an energy audit:

Building energy use: *“The use and operation of buildings requir[ing] the provision of services such as heating, cooling, ventilation, lighting, domestic hot water, transportation systems (e.g., elevators, escalators and moving walkways) in buildings and processes. In addition, energy is used by appliances within the building.”*¹⁵

Process energy use – including energy used, *“ - directly by a process, e.g. furnaces, direct fired dryers, etc.; - indirectly by a process (e.g. heat exchange, distillation, extrusion, etc.) including the specific conditions of production (e.g. start-up, shut-down, product change over, cleaning, maintenance, laboratory and product transfer); - [in] utility processes (e.g. motor driven systems (fans, pumps, motors, compressors, etc.), steam, hot water), including on site power plants; - [in] other processes (e.g. sterilization in hospitals, fume cupboards, laboratories etc.)”*.¹⁶

Transport energy use – applied to the energy used in *“the different modes of transport (road, rail, marine and aviation), as well as the different ranges (local to long distance) and what is transported (basically, goods and people).”*¹⁷

¹⁴ [British Gas Business: 'New virtual energy audit service is key to cutting emissions and costs' - future Net Zero](#)

¹⁵ EN 16247-2:2014 [98703063620.pdf \(standards.ie\)](#)

¹⁶ EN 16247-3:2014 [98701173029.pdf \(standards.ie\)](#)

¹⁷ EN 16247-4:2014 [98708368602.pdf \(standards.ie\)](#)

3.1.3 Presentation of data and information on the energy audit

Consumption data may be reported on different **metrics**: primary and final energy use, carbon emissions. Consumption data may be presented based on:

- Real measured energy use;
- Measured energy use including correction and normalisation parameters (such as external temperature or Heating Day Degrees);
- Expected energy consumption calculated with regression analysis;
- Calculations based on installed capacity and operating time;
- Modelled energy use based on the energy-related features of the building (as with the EPC).

Consumption data may be presented relative to an earlier **baseline** measurements of energy use.

Energy or carbon intensity can be presented using **indicators** which put consumption data in relation to other reference values, such as production quantity, surface area, raw materials consumed, employees, turnover, etc. The key figure of energy consumption per production quantity always refers to a point in time (month, year, etc.).

The energy audit may present the consumption data/indicators in a low to high performance **scale**. The scale may be related to the current distribution of energy performance in the stock. Alternatively, it may relate to anticipated performance, particularly the need to decarbonise. A recent consultation on a planned, new, mandatory energy performance assessment for large business buildings in the UK reads “*The [scale] also need to be set in a way that drives the stock towards net-zero by 2050. Therefore, a high performing building in 2025 may still need to improve considerably to be high performing in 2040 or 2050, and the scale must be able to reflect that.*”¹⁸

Data may be compared to a **benchmark** for similar businesses or buildings. The same UK Government consultation reads, “*[The] Benchmark should be taken to mean the standard*

¹⁸ [Introducing a performance-based policy framework in large commercial and industrial buildings in England and Wales \(publishing.service.gov.uk\)](#) Department for Business, Energy and Industrial Strategy, UK Government, 2021 Page 69

point of reference against which any buildings will be compared to generate their rating. This will ensure that businesses and building owners can have the performance of their building compared fairly against their peers.”¹⁹

In Austria, klimaaktiv determined key figures per sector on the basis of a selection of companies. In order to increase the comparability of the indicators for the companies, homogeneous groups were formed depending on the availability of data (e.g., according to turnover classes, production quantities, products, etc.). The indicators are benchmarks that show a company where it stands in terms of energy efficiency compared to other companies. Multiple scales or benchmarks may be used for different aspects of energy/carbon performance (additional scales or benchmarks may also be used for different aspects of sustainability e.g., water use).

Recommendations on the energy audit may be presented in terms of an absolute improvement in energy consumption and resulting energy costs relative to a baseline as well as an improvement using indicators, against the scale or against the benchmark. Identifying how recommended improvements to achieve a certain point on the scale is increasingly important as governments introduce mandatory minimum energy performance criteria for buildings as well as products.

Recommendations may be linked to a **trajectory or roadmap** for the business to achieve a stated improvement in energy or carbon performance, especially nearly zero or zero carbon emissions.

Financial information: the return on investment in recommended measures may be presented based on simple payback. In line with Annex VI of the Energy Efficiency Directive, (see Section 1.3) whenever possible a full lifetime cost analysis should be done and may use net present value or other financial metrics. The Italian national audit procedure requires that: “The following data should be listed according to the NPV/I ratio: a. investment b. cash flows c. savings d. payback period e. Internal Rate of Return f. NPV g. NPV/I.”²⁰

¹⁹ Ibid. Page 68

²⁰ [GUIDELINES FOR ENERGY AUDITS UNDER ARTICLE 8 OF THE EED: ITALY’S IMPLEMENTATION PRACTICES AND TOOLS \(enea.it\) 2019, P.12](#)

3.1.4 Energy Auditors

Article 8 of the Energy Efficiency Directive provides for establishment of policies to ensure qualified and/or accredited auditors able to deliver mandatory audits for large enterprises²¹; audits which meet the guidelines laid down in Annex VI of the directive (see section 1.3). However, SMEs are not required to undergo these mandatory audits. Energy auditors delivering SME audits may therefore be qualified and/or accredited auditors able to deliver Article 8 audits for large enterprises. Alternatively, auditors may be working to other standards (ISO 50002 or EN16247) or have no specific training or accreditation.

ISO 50002 Level 1 audits (and equivalents) may generally require less skilled auditors. This is not just because the audit is less detailed, but also because these audits are more likely to use a checklist approach and algorithms to produce the resulting data and recommendations.

3.1.5 Relationship with wider programmes and support

SME energy audits can be promoted and subsidised by public authorities without contravening state aid rules as EU guidelines recognise that do so has an incentive effect for environmental protection (this does not apply in the same way to large enterprises as these are already required to have energy audits under EED Article 8).²²

An energy audit may be promoted to SMEs by a public authority for general purposes or linked to a specific support programme. For example, an energy audit may be required to access funding from a support programme and to assess the improvement in performance following the installation of measures paid for from the funding. One of many examples of this is the Slovak grant funding for businesses (SMEs and larger businesses) for co-generation and RES systems²³. This SIEA (Slovak Innovation and Energy Agency) funding requires, as a condition, businesses to receive an energy audit delivered to the requirements of Annex 6 of the EED

²¹ EED (Directive 2012/27) Article 8 Para 4. Member states do not have to establish accreditation and qualification systems for independent auditors; mandatory audits for large enterprises may also be carried out by “independent authorities under national legislation.”

²² Guidelines on State aid for environmental protection and energy 2014-2020 (2014/C 200/01) [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52014XC0628\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52014XC0628(01))

²³ https://www.op-kzp.sk/wp-content/uploads/2019/12/Vyzva_60_U1.pdf

(see Section 1.3) by an EED article 8 qualified auditor.²⁴ In Italy, energy intensive SMEs²⁵ are required to undertake audits in order to access a tax relief on the purchased electricity.

3.2 Trigger points for energy audits

It is crucial that as many SMEs as possible are meaningfully engaged in undertaking energy efficiency measures via high quality energy audits. Ideally, SMEs should 'buy into' the auditing process, undertaking significant energy efficiency action following the audit. Engaging with SMEs during trigger points can be an effective means of achieving this²⁶. Trigger points can come about as a result of changes in the external environment (e.g., a new policy or funding programme), moments of change within an organisation, or can form part of regular cycles of evaluation and horizon scanning.

Much of the early work concerning trigger points or moments of change²⁷ related to energy audits and energy efficiency has focused on the domestic sector²⁸ but can be broadly applied to SMEs. The available evidence²⁹ suggests that when households and businesses are experiencing moments of change this leaves them more open to new ways of thinking and action, such as energy efficiency retrofit.

Some examples of possible trigger points include:

- Changes in national climate targets and the legal environment;
- Changes in premises;
- Changes in the tenure of premises (e.g., becoming a premises owner rather than renter, taking direct control of energy bills, tenancy renewal);
- Equipment reaching the end of its lifecycle or new technologies becoming available;
- The end of a contracting period (e.g., lease agreement for vehicles);

²⁴ Act no.321/2014 Col Para 12. [321/2014 Z.z. - Energy Efficiency Act and... - SLOV-LEX](#)

²⁵ defined as having high energy consumption in absolute and relative to their costs, and being in some specific industrial sectors.

²⁶ The Behavioural Insights Team: '[Boosting businesses: applying behavioural insights to business policy](#)'

²⁷ UK Department for Environment, Food and Rural Affairs-commissioned report (2011) '[Moments of Change' as Opportunities for Influencing Behaviour](#)'

²⁸ Energy Saving Trust (2011) '[Trigger Points: A Convenient Truth, Promoting Energy Efficiency in the Home](#)'

²⁹ Verplanken, Roy, Whitmarsh (2018) '[Cracks in the Wall: Habit Discontinuities as Vehicles for Behaviour Change](#)'

- New government support or subsidy schemes;
- New management or organisational changes;
- The end of the financial year.

3.2.1 Why is this relevant for SMEs?

Early research in this area identified that just as SMEs differ from larger enterprises in their motivations, business practices and circumstances (among other factors), so too do the trigger points that will be most likely to affect their behaviour³⁰. Many SMEs do not own the premises they operate in, which can limit their ability to undertake significant energy efficiency retrofit work, whereas the owner is not incentivised to retrofit the building because they do not stand to gain from any energy savings (the split incentive principle).

This can be compounded by the fact that many SMEs do not pay for their energy bills directly, leaving them further removed from issues of energy efficiency. Recent analysis in the UK has shown that only 56% of SMEs surveyed pay their own energy bills³¹. However, as they scale up, SMEs are more likely to move premises or recruit new staff offering positive opportunities to engage, that might not be so readily available when approaching larger firms.

³⁰ https://www.researchgate.net/publication/31292678_Regulating_Small_and_Medium_Sized_Enterprises

³¹ Department for Business, Energy and Industrial Strategy (2017) '[Business awareness and uptake of energy audits research](#)'

3.2.2 EPC assessment as a trigger point tool

While thinking about trigger points is not new there are relatively few examples of this approach being used in programmes. One existing policy that could be readily adapted to deliver more in-depth energy audits at particular trigger points is the requirement for Energy Performance Certificates (EPCs) to be produced at the point of sale or new tenancy, as required in the EPBD. Although the EPC assessment does provide some level of auditing and advice this could be strengthened by encouraging SMEs to undertake more in-depth (ISO 50002-defined level 2 and 3, investment grade) audits focused on particular recommendations on the EPC.

3.2.3 Challenges

While the potential to leverage SME trigger points is promising there are practical challenges involved. Chief among these is how a private or government-funded auditor or energy audit scheme will be aware of a trigger point unique to a specific SME. In many cases this may not be possible. This reinforces the need for strong trusted local networks who are more likely to be aware of, for example, businesses changing premises or having new management. Changes in the policy environment which may act as triggers should be easy to identify and act upon to engage SMEs. Likewise, some cyclical processes, such as the end of the financial year, can be acted upon with relative ease, engaging SMEs in the lead up to these events when senior management are more likely to be considering strategic investments.

Challenges will still persist. It is possible that SMEs undergoing significant change or at busy times of year (such as financial year end) may not have the organisational 'bandwidth' to also consider undertaking and acting on an energy audit. This issue of organisational capacity is not unique to engaging at trigger points and is a key barrier identified and discussed in this report.

3.3 Who are the market players for SME audits

3.3.1 Policy & regulatory stakeholders

Policy and regulatory stakeholders are responsible for designing and implementing national and local policies relating to energy audits: setting the framework in which the audit market operates. National governments, energy agencies and public regulators also play an important role in creating the right conditions for energy audits to be used and have impact - Policy makers can achieve this by setting targets which stimulate the market, setting minimum energy standards in building regulations, setting minimum energy ratings for properties in the private rental market, mandating businesses that meet certain criteria to carry out audits or setting up SME support programmes. For example, the Intensive Energy Consumption Management System for Industry in Portugal requires companies consuming more than 500 toe per calendar year to carry out an audit.

3.3.2 Stakeholders who provide finance

Public finance is often made available to SMEs via energy agencies or other organisations, appointed by national or local authorities, to distribute funding for energy audits and energy management improvements. For example, in Croatia, the Environmental Protection and Energy Efficiency Fund (EPEEF) was set up to support the implementation of energy efficiency and energy management measures by financing energy retrofit projects for SMEs and non-SMEs. Energy Service Companies (ESCOs) also offer a way for SMEs to finance energy audits and energy efficiency measures. Although ESCO markets are not developed in all European countries, they do operate in some. A typical package of services offered by an ESCO will include project financing and a full site survey, feasibility studies and energy audit, making ESCOs an alternative source of financing energy efficiency measure for SMEs, in the markets they operate in.

In Austria some Federal states subsidise the cost of consulting services to identify energy efficiency measures, to promote the uptake of renewable energy, or establish environmental management systems.

3.3.3 Stakeholders who provide guidance, support, and insight

In most European countries it is recognised that SMEs require some level of support to conduct energy audits and make energy efficiency improvements, therefore making advice providers an important stakeholder in the SME market. Typically, SMEs need support to fully understand what an energy audit involves; how their business could benefit from an audit; how to find auditors and understand the next steps.

Advice providers who offer SMEs information, and help increase awareness and understanding of energy audits, can help SMEs overcome barriers and access the benefits of energy efficiency. Organisations providing advice and support are sometimes publicly funded, for example Zero Waste Scotland in the UK is funded by the Scottish Government and the European Regional Development Fund to support businesses with all aspects of resource efficiency. Klimaaktiv, the climate protection initiative in Austria, which offers support to support and advice to SMEs through awareness raising, guidelines and workshops on carrying out energy audits and improving their energy management, is financed by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology. klimaaktiv works closely with the regional energy audit SME support programmes.

Other support initiatives emerge from academia, for example the Energig network initiative by the University of Gävle in Sweden. The network was set up to train and support SMEs on energy management and covering things like carrying out an audit and monitoring energy consumption.

Trade associations also play an important role in distributing information to SMEs about available support programmes for energy audits. Trade associations are a trusted conduit of information and in many countries are the only organisations who have direct communication links with SMEs. This places them in a strong position to disseminate information and guidance on energy audits and energy management.

3.3.4 Stakeholders who conduct energy audits

Energy audits related to EED across Europe are mostly conducted by independent energy auditors. The Energy Efficiency Directive requires EU Member States to put in place quality assurance measures for energy audits (or an independent authority to deliver the audits). As such, many countries across Europe have an energy auditor accreditation scheme, some require mandatory training, and some countries operate a register of energy auditors. Independent auditors and consultants provide audits as a one-off service. Other SMEs may employ an energy manager or other specialist who is qualified to conduct energy audits.

3.3.5 Stakeholders with responsibility for maintenance and upkeep of equipment and property

In the commercial private rented sector, property owners are another important stakeholder group in the SME market. Where the landlord, managing agent or property owner has the responsibility of maintenance and upkeep of the premises, they have the potential to play an important role in initiating the process of an energy audit and subsequently implementing any of the recommendations.

3.4 Future direction for energy audits

Exactly what form future energy audits and energy efficiency programmes will take in the EU will, in part, be dependent on details of the proposed review of the Energy Efficiency Directive, which has now been published following a consultation process which commenced in November 2020³², but must undergo a process of negotiation and revision before being formally adopted. The final outcome will look to improve on the previous iterations of the Energy Efficiency Directive so that it is able to sufficiently support delivery of the 2030 EU energy efficiency targets and emission reduction targets and work alongside other European Green Deal initiatives.

³² https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12552-Review-of-Directive-2012-27-EU-on-energy-efficiency/public-consultation_en

Some partners mentioned that one particularly promising future direction for energy audits is for them to be combined with wider environmental assessments to offer an 'Efficient Resource Management Audit' to SMEs. This could prove to be more enticing to SMEs and could deliver against wider decarbonisation and environmental protection goals. This approach could tie into the greater prominence of circular economy principles. The Portuguese Energy Agency (ADENE) is currently developing an audit model that will combine information on water, materials and energy offering more opportunities for greater efficiencies. However, by increasing the scope of the audit the level of complexity also increases with knock on effects on the cost, time and level of training required. Additionally, it can already prove challenging to find suitably qualified experts for existing comprehensive audits and so finding suitably qualified auditors for these more wide-ranging audits could be a limiting factor. Undertaking a 'super audit' would require experts from different fields or auditors to undertake additional training. This could be addressed through more effective auditor networking and collaboration.

The Italian national energy agency, ENEA, together with the University of Basilicata, are working on a free tool for SMEs that draws connections between energy and other environmental resource efficiencies to better allow SMEs to reduce consumption. The tool builds on previous work carried out for large enterprises. As we increasingly view energy systems and the wider need to decarbonise more holistically, it seems likely that more in depth audits will grow in prominence.

4 Barriers to SMEs in adopting energy efficiency measures and energy audits

The following section examines the barriers to energy efficiency that SMEs face, as well as how best practice and application of energy audits can overcome those barriers. The information in this section is based on available published literature, data submitted by nine National Energy Agencies, interviews with senior managers of National Authorities and content from workshops on this topic.

4.1 Economic

- Barriers to initial investment

The upfront costs of engaging an energy auditor or undertaking a feasibility study may be prohibitive for many SMEs who may be reluctant to pay for audits if they are not sure about the benefits and long-term savings they generate or if energy costs are relatively low compared to other costs. Some SMEs may find a barrier if they are asked to pay upfront for an audit and offered a refund on completion of the audit as this introduces a risk for the participating SME. The cost of an energy audit is dependent on business size, sector and energy maturity of the enterprises. The subsidy programme “Promotion of Energy Audits in Small and Medium Sized Enterprises” run by The Energy and Water Agency, Malta found that the amount of subsidy, dependent on the size and NACE sector of the enterprise, was sometimes not sufficient to cover the costs of the energy audit which creates a barrier to SMEs. They also found that if enterprises were required to pay upfront for the audit and then get a refund, it presents a considerable barrier, particularly for smaller enterprises.

- Unaffordable recommendations

For SMEs that undertake an audit, there may be challenges in accessing finance to implement the energy efficiency measures that have been identified in the audit. Without subsidies, microloans or grants the upfront costs of the measures may be out of reach for many SMEs.

- Access to finance

In order to receive funding, SMEs can be asked to provide financial guarantees or may be required to have a good credit rating in order to receive microloans and grants. This is not possible for some SMEs, particularly for young and micro-SMEs. Policymakers will want to limit the level of risk in delivering projects, but this restricts access to financial support to those that may benefit most or want to engage with their business energy efficiency.

4.2 Bureaucratic

- One-size-does-not-fit-all

SMEs represent an extremely diverse group with varied processes, consumption patterns and priorities, therefore support programmes or tactics for engaging must be sub-divided and tailored to match the business needs of the sector and audience. The small business market must be segmented by not only size but also by energy needs and sector. This presents a challenge for offering economies of scale or standardised financial tools.

- Administrative barrier

Issues arise for SMEs when the support programmes have administrative barriers, including complicated and lengthy application processes, funding delays or inadequate guidance and training throughout the programme. During such periods the SMEs may lose enthusiasm and disengage from the process.

With the Operation Programme Quality of Environment in Slovakia, they often receive incomplete and insufficient applications. This could be linked to the process being overly complicated or not fit for purpose.

The Director of Innovations and International cooperation at SIEA, Mr. Artur Bobovnický stated that because energy audits are not mandatory for SMEs there is a lack of motivation, with the exception of governmental/European funding where energy audits are a prerequisite. There are barriers with these funding programmes with the application procedures being too complicated, which leads to errors in applications and SMEs becoming discouraged. *“Negative experience leads many companies and mainly SMEs thinking the whole process is not worth it and energy audit is just another administrative burden”.*

- Short political terms

Fixed term political cycles can result in an uncertain investment climate if investors and SMEs have no guarantees that the next government will not revoke funding streams or change the policy landscape. This reduces SME confidence to invest in longer term measures if continuation of the contingency or support is dependent on being aligned with the political will of the next government.

- Technical language

Technical jargon, abbreviations or complicated language used in both the support programme materials and the outputs of the audits present a barrier to SMEs. If the information presented in a technical report is not engaging, the SME is less likely to continue with the programme.

4.3 Organisational

- Lack of resources

A lack of resources (time and money) is commonly stated as the main barrier to SMEs engaging with energy efficiency. During an interview with the senior leadership team at EWA they considered lack of financial capital to be the main barrier for SMEs in adopting energy audits and energy efficiency measures in Malta. Typically, SMEs do not have the financial resources to invest in energy efficiency measures and staff time is dedicated to business priorities of performance and competitiveness.

The Head of the Italian National Energy Efficiency Agency identified the two main barriers to SMEs adopting energy audits and implementing energy efficiency measures as a lack of knowledge and financial resource. This was consistent with the comments from CEO of the UK Energy Saving Trust, who mentioned that a key barrier for SMEs taking up energy audits is the limited administrative and management resource. They may be aware of the energy audits, but they are seen as “nice-to-haves” instead of core business needs. Support programmes that are not accessible or easy to implement neglect to understand the business reality for SMEs.

- Lack of awareness, information or understanding

SMEs are often not aware of the benefits of energy efficiency or the support that is available to them. A certain amount of education needs to be done to make information about the benefits to SMEs more readily available. Although they may be eligible and interested in receiving support, they do not have the capacity to search for the opportunities. There is also a considerable amount of misinformation that discredits investments and therefore introduces uncertainty.

A Senior Expert at AEA raised the issue that there is a big gap between awareness of energy efficiency and actioning the financing and implementation of the necessary measures. There needs to be considerable support and intervention to overcome the barriers that prevent SMEs getting to the implementation phase.

- Poor understanding of the value and purpose of audits

In an interview with Senior Leader Dariusz Koc, MD at KAPE, one of the main barriers identified related to lack of awareness of the benefits of conducting an energy audit and limited understanding of the energy costs within their business. Where mandatory audits are imposed, many businesses do not consider the process provides any significant value, particularly if there is no guarantee of financial aid or grants following the audit.

A similar perspective was voiced by the President of the Centre for Renewable Energy Sources and Savings (CRES) in Greece, who also stated that owners and managers not being aware of an audit's benefits and not being able to quantify these benefits was a key barrier. In his view, there is a tendency to undervalue the financial savings, the environmental benefits, the improved working conditions and corporate social responsibility that energy efficiency improvements can bring.

- SMEs may be reluctant to undertake the audits to avoid any obligation to enact the recommendations of the auditors.

For some companies, energy bills only represent a small proportion of the regular outgoing expenditure therefore represents limited motivation to invest and payback periods may not seem cost-effective.

- Lack of expertise/infrastructure

Larger companies may have in-house sustainability and energy experts that they can commit to energy management. For SMEs, there may be a member of the team that takes responsibility for energy matters but not their dedicated role. In most cases, SMEs do not even have access to external energy experts to advise them on the best course of action. Unless there are proactive team members or effective communication strategies from policy makers, SMEs are unlikely to be informed about appropriate energy action for their organisation or how an energy audit can benefit them.

- Decision making barrier

The people responsible for undertaking energy audits within an organisation, may require approval from senior management. This poses a particular challenge if the senior management is not motivated by energy efficiency or if energy efficiency investments are considered a low priority for the organisation. The Head of ADENE's Department of Programmes and Initiatives considers lack of energy expertise amongst company managing directors as one of the main barriers to SMEs undertaking energy audits.

- Low confidence in audit process

For more technical and industrial SMEs, their business processes required sector specific expertise which a generalist auditor is unlikely to have as thorough an understanding of as the businesses themselves. SMEs sometimes exhibit some resistance to suggestions from auditors who do not fully understand the implications on their businesses. A senior expert at the Austrian Energy Agency noted that if the auditor does not fully understand the business needs and priorities, this will be a barrier to the company implementing any actions identified in the audit.

4.4 Other

- Premise tenure

The tenure of premises is a key non-energy barrier, as many SMEs rent their premises, limiting the improvements they can make themselves. A survey completed by the Federation of Small

Businesses in the UK found that 45% of SMEs consider that leasing or renting their premises is a barrier to improving their energy efficiency³³. Some business rents include utilities, or there is insufficient sub-metering to provide exact energy consumption, which presents a motivation barrier for SMEs to engage with their business consumption.

- Not a financial audit

Energy audits can be confused with financial audits, which are associated with an investigation into financial management and bookkeeping processes. SMEs may be reluctant to invite scrutiny of their records for fear of penalisation. Therefore, the process and objectives of an energy audit need to be made very clear from the outset.

- Stigma associated with accessing support

There may be social stigma associated with accessing or applying for business support, that the business does not want to be seen as failing or not financially viable³⁴.

- COVID-19

The financial impacts of COVID-19 on SMEs have been felt around the world. For some businesses there is even more pressure to prioritise growth and profit over investment in energy efficiency measures. There are considerable financial recovery packages being made available, such as the next Multiannual Financial Framework 2021-2027 with 30% (around 550 billion euro) is earmarked for climate goals and a proportion of which will hopefully translate to resource needed by SMEs to engage with energy efficiency.

4.5 Impact of barriers on different sized SMEs

Certain barriers impact organisations of different sizes in different ways. For instance, smaller SMEs may have less financial reserve to invest in energy efficiency measures, whereas larger SMEs may have more complicated investment approval processes and be less dynamic in terms of incorporating innovative practices. The following table details some typical barriers

³³ <https://www.fsb.org.uk/static/637791a4-74df-4036-b8ec3bd52ee86cf9/The-Price-of-Power-Report.pdf>

³⁴ <https://whatworksgrowth.org/blog/how-can-programme-take-up-be-encouraged/>

and how they are impacted by the size of the SME. The classification of the challenges has been averaged based on the inputs and opinions from all the partners, incorporating a review of partner data, workshop content and input from wider literature.

Table 1: Impact of sample barriers evaluated based on the size of the enterprise

Barriers	Size of SME		
	Micro	Small	Medium
Access to finance	Challenging – providing guarantee for accessing credit e.g., microloans	Moderately challenging	Not challenging – more likely to have financial reserves. Internal departments that manage business finances
Energy consumption data	Moderately challenging – usually simple energy consumption data / locally accessed	Moderately challenging – may not receive metered consumption	Challenging – more complex organisational consumption
Lack of resource (finance, time, expertise)	Challenging	Challenging	Moderately challenging
Energy efficiency opportunities	Challenging	Challenging	Moderately challenging

4.6 Impact of barriers on different SME sectors

There is considerable variation amongst and within SME sectors, each with barriers unique to their sectors that may need specific application of best practice. During one interview, the Head of the Energy Efficiency Department at EIHP said they thought the type of SME to be a determining factor as to which barriers were the most significant in preventing the adopting of energy audits and the recommended energy efficiency measures. Factors such as proportion of energy costs of total business outgoings, lack of ownership of facilities in which

the business activity is performed will vary significantly between businesses in different sectors (e.g., manufacturing businesses which need premises to house industrial processes may be more likely to own their premises than office or retail businesses).

Table 2: Classification of challenges to SMEs from different NACE sectors

Barriers	NACE Level		
	NACE section G – Wholesale and Retail	NACE section C – Manufacturing	NACE section M – Professional, scientific and technical activities
	<i>i.e., sale without transformation</i>	<i>i.e., physical or chemical transformation of materials, substances, or components into new products</i>	<i>i.e., legal and accounting activities, management consultancy, advertising and market research, scientific research and development</i>
	Consumption features		
	Complex consumption profile Medium intensity energy profile	Complex consumption profile Medium/high intensity energy profile	Complex consumption profile Low/Medium intensity energy consumption profile
Sector expert auditors	Not challenging	Challenging	Moderately Challenging
Tailored support provision	Moderately challenging	Challenging	Challenging
Energy structure - policy and strategy	Challenging	Moderately challenging	Challenging
Senior management engagement	Moderately challenging	Moderately challenging	Moderately challenging

Table 2 lists some example barriers for three NACE³⁵ sections that are well represented by SMEs, as determined by the previously undertaken SME mapping exercise in task 2.1 of this project. The designation of “Challenging”, “Moderately Challenging” or “Not Challenging” has been determined following discussion and inputs from all project partners and the selection in Table 2 represents average opinions.

4.7 Barriers to policy implementers in engaging SMEs

- Recruiting and engaging with SMEs

Policy makers and programme implementers experience obstacles when trying to sign up SMEs to audit schemes, even when the support programme is offered free of charge. This may be the result of SMEs perceiving limited benefits to undertaking the audits. Alternatively, it can be the result of poor programme design and using the wrong outreach approaches and networks. For instance, the ENERGIG programme in Sweden, delivered by an academic institution found that they were spending one week on recruitment per business which is extremely time consuming and ineffective use of public funds.

- Policy and sectoral adaptation

As Europe sets and implements ambitious decarbonisation targets across Europe, there will be drastic changes to all sectors which will look very different today compared to 2030, and again to 2050, therefore policy frameworks need to be continually adapted. This can be a challenge for policy makers to ensure that the policy best reflects and supports sectors transition to a low carbon economy.

- Data Availability

There is limited data on SMEs, in terms of energy consumption and records of businesses that have undertaken energy audits. This is due to the wide range of sectors represented and limited regulatory requirements for data submission. In addition, there are enormous numbers of SMEs across Europe which presents a significant challenge in managing data collection

³⁵ The Statistical classification of economic activities in the European Community, abbreviated as NACE, is the classification of economic activities in the European Union (EU)

and databases of this information. Without good quality datasets, policymakers must make best estimates of the impact of regulatory interventions. In addition, without robust datasets, comparison of programmes nationally and/or internationally is not possible.

4.8 How can the barriers be tackled through best practice

4.8.1 Programme design

- Engaging SMEs effectively

Programme implementers should employ the best placed resource to recruit SMEs to a programme. This may be an external recruitment specialist, or it may be more effective to utilise the existing relationships of local authorities in a community or encourage auditors to approach businesses themselves. Similarly, industrial associations can play an important role in engaging with individual SMEs. A significant amount of time should be spent considering how SMEs will be effectively engaged when planning a programme to address the barriers to awareness/understanding and potential low confidence in the audit process. A best practice example is the Business Energy Efficiency Project (BEEP) in County Durham, UK, who are able to use their networks for outreach and trust building. Whereas for the ENERGIG programme in Sweden, they found that it took one person week per business recruited as they are an academic institution not a recruitment specialist. Support programmes should be designed to include younger SMEs so that best practice can be incorporated into business as usual early in their business model to avoid more costly interventions later in their development. Start-up SMEs will tend to interact more with public and private sector institutions as they are created providing an opportunity to engage along a series of early trigger points.

- Raising awareness of the business benefits of acting now

As well as appealing to SME's desires to reduce their carbon footprint, illustrating the wider business benefits and opportunities of undertaking audits and energy efficiency retrofit is important. In a direct way the money saved as a result of energy efficiency can be reinvested in the business making it more competitive in the market. Larger businesses will be under

increasing pressure to address their carbon impact with knock on effects on SMEs in their supply chains, who will be expected to engage and deliver savings of their own. Investing now gives SMEs a competitive advantage when tendering for contracts and already SMEs are seeing the positive impact of being identified as environmentally friendly businesses. While for many SMEs expenditure on energy may be a small share the wider, less-tangible benefits in terms of competitiveness and being seen to be 'green' should be important to all SMEs.

By not acting now on energy efficiency, costs are likely to be higher in the future. SMEs should be made aware of this while being rewarded for their early efforts to affect positive change and the significant role they can play in helping to reach climate targets.

- Provide a holistic support programme

Support programmes should be designed to support the SME from start to finish and ideally cover the costs of the investment. This can help to address the limited time and resources that many SMEs will have available to independently undertake audits. An effective support programme needs to take into account the following elements of the process:

- Reaching and motivating SMEs using the full range of avenues and arguments and capitalising on trigger points;
- Recognise that one-size-does-not-fit-all and that a more bespoke auditing process should be the priority;
- Identifying the most appropriate level of audit (see section 3.1) for a given SME;
- Provide financial support options for implementation of measures.

Providing audits in isolation is unlikely to be enough of an inducement to action for many SMEs; those SMEs who undertake audits and action the recommendations are likely to have been engaged in the idea of energy efficiency savings already. An effective programme should incorporate both engagement and implementation as well as audits themselves.

A best practice example is the Production Integrated Environmental Protection (PIUS) programme in Germany which includes an initial consultation with PIUS-Consult, followed by a PIUS-Invest grant of maximum €500,000 per application with a funding rate of 1kg CO₂ emission reduction per Euro funding, which is then further supported with the Innovation Loan so that overall, 100% of the project is funded. These grants can include investments,

personnel costs, or external expertise. In the initial pilot of PIUS, they found that there was a big gap between the need for investment and the capability of SMEs to invest. This was overcome with the inclusion of the PIUS-Invest element.

- Energy diversification

By diversifying business energy portfolios to include energy from renewable sources, SMEs are increasing their resilience and energy security as well as participating in a transition to smart energy systems. A programme of energy auditing which engages with these technologies and is able to make recommendations which include a role for energy diversification is likely to be more effective, while recognising that this may prove challenging for smaller or less mature SMEs to action. Combining income-generating renewable energy installations with energy efficiency measures can also improve the business case for businesses and shorten payback periods. In the future we will likely see further diversification into battery storage, demand side response, and flexibility markets among other new technologies and approaches. There needs to be integration of different support elements and flexibility within programmes to reflect the increasing number of decarbonisation options including energy efficiency, expanding the use of renewables and emergent technology (such as Carbon Capture and Storage and green hydrogen). For instance, policy options need to reflect technology capacity, i.e., implementation of sufficient storage to coincide with roll out of renewable solutions. Implementation approaches needs to be from a combination of bottom-up and top-down policies and should be flexible enough to allow SMEs in different contexts or who wish to undertake a more innovative approach to be supported.

- Appropriate incentives and legislative drivers

Businesses often need to be incentivised to undertake energy audits and action their outcomes. As far as possible the upfront costs of energy audits should be removed for SMEs given that improving their energy efficiency is of national and European importance and must be done at pace. With this said, incentives should be based on more than just fiscal motives.

For many SMEs, the payback period for measures is too long to suit their business model or given context. An effective combination of incentives and legislative drivers could see a dedicated awareness raising campaign and upfront subsidies to incentivise engagement followed by a carbon tax or set of minimum energy efficiency standards. Other ways of

incentivising could relate to supply chain engagement, company reputation and expanding networks. In terms of using subsidies and grant funding to incentivise SMEs to carry out energy audits and implement energy management systems (EMS), a best practise example of this is the ECO fund in Slovenia³⁶, which has been in operation since 1993 and provides a grant for 50% of the costs of the audit or EMS. This kind of offer can be strengthened by stipulating that in order to receive specific grant funding or support, it is mandatory that SMEs undertake an audit as part of the programme.

- Simplify administrative burden

In terms of improving access and making the pitch to SMEs as appealing as possible, care should be taken to remove unnecessary administrative burden. The time and energy required to apply for state funding is often too great for smaller businesses and they cannot afford to pay external consultants to undertake the process on their behalf. A best practice approach would simplify the application process and provide support to smaller businesses to prepare the applications.

- Address other non-technical barriers

Ensure that sufficient energy and resource is allocated to addressing the barriers outlined at the start of this section, to facilitate the electrification of key sectors e.g., industry and service sectors. As well as the potential best practice solutions discussed above, programmes should seek to address the decision-making barrier whereby auditors may not be interacting with the key decision makers in an organisation. Before any audit is undertaken it should be a priority to engage with these key decision makers and explain the various benefits of undertaking and actioning an energy audit.

- Scale up best practice / knowledge networks

It is important to take the best practice elements from a given programme and share this knowledge with other partners, projects, and governments. Utilising local networks is crucial for sustained engagement and so it is important that the trust and local knowledge of businesses is maintained. Strengthening local and regional networks is aided by providing local governments with the tools necessary to support their own networks. It is the role of local

³⁶ <https://www.ekosklad.si/english>

governments to promote synergies and to put the necessary infrastructure in place to allow SMEs to readily access audits.

An example of a best practice programme aiming to work in this way is the Swedish pilot energy efficiency network programme ENERGIG. Through implementing a regional energy end-use and energy efficiency measure database that was shared across seven networks (55 participating industrial companies) they observed a 16% improvement in energy efficiency, double the impact of energy audits alone.

A larger scheme could incorporate neighbouring local authorities to share resources, knowledge, and learning, allowing for greater sharing of good practice. To facilitate this, stakeholders utilise digital tools to share the best practice learnings from each project so that other programmes can benefit and incorporate best practice e.g., BEEP 2³⁷ has a website that provides information for businesses on how to read meters, how to install renewables and raises awareness of the multifaceted benefits of investing in energy efficiency. This goes beyond an individual business to consider the creation of local jobs, how energy efficiency stimulates local investments and supports other SMEs.

- Matchmaking

Creating strong networks between SMEs, auditors, installers, local government, etc. and delivering effective programmes can be supported through business-to-business learning platforms that support SMEs and connect similar programmes nationally and internationally (known as matchmaking³⁸). The Interreg Europe Policy Learning Platform is an example of this³⁹, offering peer reviews, a policy helpdesk and matchmaking sessions.

- Private-public initiatives

Greater networking and matchmaking often lends itself to greater public-private partnerships and initiatives. When local and regional governments are able to connect the private and public sectors stronger outcomes can be delivered. The association with local or regional

³⁷ <https://www.interregeurope.eu/policylearning/good-practices/item/5176/business-energy-efficiency-project-2/>

³⁸ https://www.interregeurope.eu/policylearning/news/11907/matchmaking-follow-up-report-resource-and-energy-efficiency-support-schemes-for-smes/?no_cache=1&cHash=338e675eeb96d36910cdc73bd8241d1c

³⁹ <https://www.interregeurope.eu/policylearning/expert-support/policy-helpdesk/>

government adds weight to the offer of an audit while the private sector can leverage its network and provide a response service. These initiatives are well placed to create the more dynamic and direct funding mechanisms required.

- Auditor network

As well as greater networking between SMEs and government stakeholders encouraging auditor networks can help in delivering an effective and joined up service. A strong auditor network can seek to provide a standardised training programme for auditors and connect experts to ensure that the SMEs involved in the programme are receiving support from experts. Auditors can also consult other experts in the network. In Austria's regional programmes of klimaaktiv, networking between the energy consultants is a core element of the programme. An example of strong requirements for the qualification of energy auditors is EU standard EN16247-5⁴⁰. As discussed in section 3.4, the future of energy auditing programmes may well see dedicated auditors for particular sectors. An issue often reported by SMEs, particularly industrial SMEs, is that auditors have a more general understanding of energy use but do not necessarily understand the machines and processes necessary to their work.

- Build capacity of SMEs

Local and regional governments are often aware of the demands in their regions and potential challenges, but SMEs may lack the capacity or confidence to engage with programmes. Local and regional governments can address this lack of capacity by building confidence, attracting private investment into regions using dynamic business models and instrumental programme funding where best practice can be replicated. This could include developing financial tools to support SMEs to invest in clean energy solutions. This process should seek to minimise the risks of investment and aggregate products in order to make them available to SMEs. Local authorities may lack capacity themselves to engage meaningfully with the SME community and national government should seek to appropriately fund these programmes and encourage local government to invest in the skills and capacity needed.

⁴⁰ <https://www.en-standard.eu/bs-en-16247-5-2015-energy-audits-competence-of-energy-auditors/>

4.8.2 Improving the quality of audits

- Expand audit focus

To increase the utility of audits, they could go beyond assessing energy efficiency to also include resource efficiency and productivity improvement factors such as innovation. This “super audit” will create a more appealing package for SMEs, which will aim to include SMEs with low expenditure on energy and harness SMEs that are ambitious about energy efficiency. So that the SMEs are not overburdened, additional elements should be optional depending on the capacity of the SME undertaking the audit.

- Standardisation of process

Previous literature and stakeholders engaged through this project have indicated that there is a need to standardise the approach to audits - how data is categorised, the digital tools that are used, the training of auditors and the outputs and recommendations provided to SMEs. This is also important for networks and scaling up as SMEs can compare and benchmark like for like.

- Standardised carbon savings metric

Administrators could introduce a standardised carbon metric to quantify potential savings alongside pre-existing measures. This can then be used to compare between projects and could be used to create savings targets which if met could entitle SMEs to receive additional funding. The PIUS project in Germany uses carbon saved per Euro invested. They calculated that 1.6kg of carbon per year was saved for every Euro invested. As well as increasing the importance of carbon savings and verifying the carbon impact of interventions this approach also incentivises more cost-effective measures.

- Independent high-quality audits

The most successful and trusted programmes relied on independent auditors i.e., were not seen to be promoting a particular technology. Greater faith in the process can be achieved by using a trusted body as the delivery partner i.e., a local authority may be best placed to access the local businesses, and by producing high quality, actionable reports which are accessible

to non-experts and are free of jargon. This also improves the reputation of local authorities if well delivered, a finding evidenced through the Business Energy Efficiency Project 2⁴¹.

5 Recommendations

It is widely acknowledged by private and public sectors that there are many barriers to SMEs accessing the benefits of energy audits. The main barriers relate to resource availability (time, money, and expertise), low awareness amongst SMEs and energy efficiency investments being regarded as low priority.

The following section outlines a series of key recommendations that policymakers can use in their own country context to help address the barriers discussed in this report and enhance the delivery of SME energy audit programmes.

- Securing meaningful awareness raising and engagement

As a crucial first step programmes should be developed with a strategy in place to meaningfully engage with SMEs and raise awareness of the programme and the wider potential benefits of audits and energy efficiency improvements (e.g., competitiveness within supply chains). The optimum strategy in each country will differ depending on a range of contextual factors. The pre-existing structures and networks should be leveraged to increase uptake and engagement. Some of the most successful current programmes provide free audits and subsidy support for the recommended measures. However, meaningful engagement could potentially be strengthened by asking SMEs to initially pay for audits with this upfront cost reimbursed if SMEs implement the recommended actions within a certain time frame. A judgement will likely have to be made between offering free audits, which will increase uptake but may result in only a small proportion of audit recommendations being actioned and asking SMEs to pay initially but with a reimbursement following installation of measures, which might see fewer total applicants but should promote greater engagement from those SMEs who do interact with the programme.

⁴¹ <https://www.interregeurope.eu/policylearning/good-practices/item/5176/business-energy-efficiency-project-2/>

- Strong networks

As well as being useful for increasing awareness and engagement between programme implementers and businesses, strong and regional networks of stakeholders should be encouraged and supported as a key priority to ensure strong project outcomes for SMEs. It has been discussed elsewhere that networks of local government representatives, SMEs and auditors have been shown to strengthen programmes as they can identify potential barriers and provide place-specific solutions. Networks of auditors can help to deliver better outcomes for SMEs by sharing best practice and identifying those auditors who will be best placed to advise particular sectors, giving a more bespoke service.

- Strong standards for auditors and their outputs

While strong qualification standards are mandatory for auditors undertaking audits as part of the requirements of Article 8 of the Energy Efficiency Directive the same standards do not apply to SMEs (unless particular SMEs fall under a national EED Article 8 transposition). In many cases SMEs are having audits delivered to these standards but this nonetheless presents a potential loophole whereby poorer audits and audit reports can be provided for SMEs. This should be addressed by requiring SME energy auditors to have achieved a certain level of qualification. Requiring auditors to meet stringent standards increases trust in the auditing process while helping to ensure the best recommendations (in terms of energy efficiency improvements and feasibility) are being provided and outputs are comparable across different SMEs to allow for reliable benchmarking. More broadly, standards should be set on how audits are conducted and the nature of the reports that are produced. These should: be free of jargon, contain useful data visualisation, suggest actionable recommendations that offer a route to further decarbonisation, contain assessments of the estimated costs, energy, and carbon savings achievable, be made readily available across organisations and delivered to decision makers.

- Create linkages between audits and wider support programmes

Undertaking energy audits should be seen as the entry point to a holistic support programme with strong links between audits and wider support. The best examples of current programmes see organisations receiving funding to action the recommendations of energy audits. This should be the norm for future programmes. This does not necessarily have to be in the form

of grant funding, with low interest loans being another option. Governments should work with energy service companies and private finance organisations to develop audit outputs that can be used to enable access to private finance.

Underpinning all future energy audit and energy efficiency support programmes should be a secure policy landscape. For SMEs to invest in measures that may have long payback periods certainty is needed on the direction of travel. At the highest level this means national governments having legal commitments to emission reductions and energy efficiency improvements. At the programme level it means long term funding commitments over a period of several years to give confidence to SMEs and private finance to invest.

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