Description of the national context per use case

Setting the scene for closing the demand-supply gap for energy efficiency in SMEs

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Project Factsheet

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Summary

SMEs collectively consume more than 13 % of energy globally, and significant opportunities exist to implement energy efficiency measures with potential for savings of up to 30 %. However, issues like the lack of expertise, time and capital, despite energy audit supporting schemes, often prevent SMEs from implementing energy saving measures or from getting access to the energy services market. The GEAR@SME project is addressing these issues by focusing on decreasing barriers to energy efficiency improvements and enhancement of the energy culture in SMEs through establishment of local energy collectives linked to industrial areas or business parks, and by providing necessary support systems for these collectives. The project will include four use cases in industrial areas in Germany, Italy, Romania and Italy, upscaling to larger group of local/regional clusters and roll-out activities across Europe.

This report is setting the scene for the GEAR@SME project. In the report the national and local context in relation to the five partner countries (the four mentioned above and Sweden) is described in relation to five areas:

1. Overview descriptions of the role of the SME sector in each country.
2. Detailed descriptions of key national energy efficiency support initiatives in the countries. These descriptions are focused on initiatives that are especially relevant in relation to the GEAR@SME project, i.e. projects addressing SMEs and especially collectives of SMEs. Further, the experience from each initiative has been interpreted in relation to the GEAR@SME methodology, which is based on the core elements of organizing, activating, enabling the actors of a local SME energy collective in its local embedment.
3. Specific information on important factors for bridging and closing the gap between the SMEs on the demand side and the energy service supply side, since the bridging of this gap is of special relevance to the GEAR@SME approach. This specific information is based on the experience gained from the initiatives described before, and on the expertise within in participating organizations.
4. A detailed tools survey of already available tools, training and education materials, and support channels in, that could be relevant for the use cases in the GEAR@SME project. The survey identifies and categorizes in total 73 different tools between the five European countries involved.
5. A description and comparison of current policies and finance schemes directed towards and/or impacting energy efficiency in SME on the national, and regional/local, levels. The description includes policies, regulation and obligations, incentives and funding schemes.

Each of these areas have been based on collection of information from the partner organisations, via different types of questionnaires, and are described in detail in Chapters 4 through 8 in the report. Within this part of the report all information is organized per country.

In order to make the overall comparative analysis and conclusions from this extensive material easier to access for the general reader, the approach of the study and the findings are summarized in the initial – and more condensed - Chapters 1 through 3. In this part, similarities and differences between countries are highlighted.

1 Introduction

1.1 Background

SMEs collectively consume more than 13 % of energy globally, and significant opportunities exist to implement energy efficiency measures with potential for savings of up to 30 % (IEA, 2015). At the same time, the adoption rate of energy efficiency measures in SMEs is low. According to the Observatory of European SMEs, fewer than 30% of SMEs in Europe have implemented any measures for conserving energy, and only 4% have a comprehensive approach to energy efficiency. Barriers for SMEs to invest in energy efficiency are well known (Thollander & Palm, 2013). Issues like the lack of expertise, time and capital, despite energy audit supporting schemes, often prevent SMEs from implementing energy saving measures or from getting access to the energy services market. Energy audits are only effective instruments to stimulate energy efficiency measures in SMEs that are not finance-constrained (Kalantzis & Revoltella, 2019).

The focus of the GEAR@SME project will be on decreasing barriers to energy efficiency improvements and enhancement of the energy culture in SMEs through establishment of local energy collectives linked to industrial areas or business parks, and by providing necessary support systems for these collectives. The untapped potential of energy efficiency will be addressed by the GEAR@SME consortium by substantiating the role of a local so called Trusted Partner to bridge the gap between SMEs (demand side) and suppliers of energy services toward SMEs (supply side) such that SMEs will effectively undergo energy audits and implement energy saving measures. The Trusted Partner will be supported by the GEAR@SME methodology, which aims to catalyze the implementation of energy efficiency measures by taking a local, collective approach based on multiple benefits, tailored to the specific locality. Multiplier organizations contribute to the spreading of the methodology and hence, to the upscaling from the use cases that will be performed within the project (see Figure 1).

According to this approach, two important types of stakeholders for these collectives - in addition to the SMEs located at the industrial area or business park and the energy service supply sector serving them - that need to be clearly defined are thus:

- Trusted Partners, whose role it is to mediate between the energy service supply side and the SMEs (the demand side), to bring together the right partners in the collective, to initiate and organize activities within the collective and to inspire, develop and amplify the implementation of energy audits and subsequent energy saving measures in SMEs. According to scientific studies, a partner is trusted by the demand side (SMEs) when the partner has three characteristics (Mayer et. al., 1995): ability, benevolence and integrity. Ability is a group of skills, competencies, and characteristics

that enable the partner to have influence within the business domain of the SME. Benevolence is the extent to the partner is believed to want to do good for the SMEs, aside from an egocentric profit motive. Integrity refers to the SMEs perception that the partner adheres to a set of principles that SMEs finds acceptable. While in theory any entity who fulfils these criteria can be a Trusted Partner, in practice a non-commercial entity will often serve as Trusted Partner, such as a business park manager, an independent local foundation for entrepreneurs, or a municipality.

- Multiplier Organizations, whose role it is to communicate and inspire to the implementation of energy efficiency initiatives in SMEs and to identify local energy collectives suitable for upscaling. Multiplier Organizations can contribute to widespread implementation of the concept and the support systems developed within the GEAR@SME project.

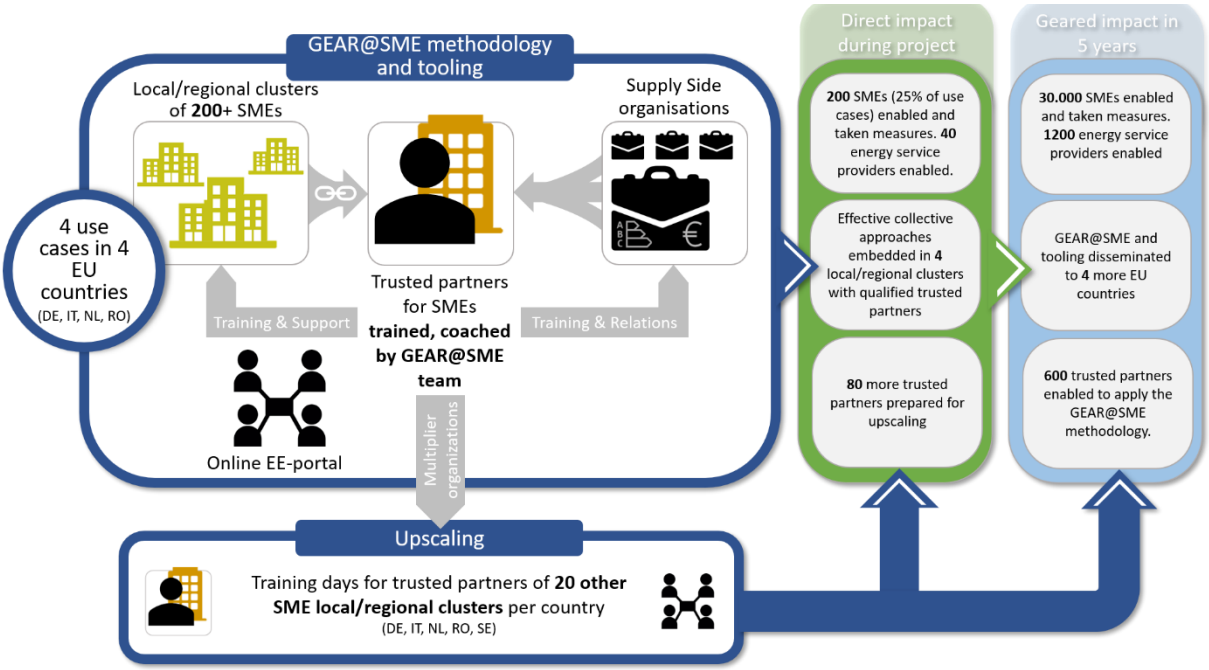


Figure 1 Description of the GEAR@SME methodology and expected impacts during the project and 5 years after the project ends.

The common methodology is founded in behavioural change frameworks such as Intervention Mapping (Bartholomew Eldredge et al., 2016) the Behaviour Change Wheel (Michie et al., 2011).

All frameworks of this type assess that, in order to create a lasting behavioural impact, attention must be paid to each of the following aspects:

- Activation of the SMEs - they should be motivated to take appropriate action;
- Organization of the SMEs, in a collective structure to overcome issues that individual actors may face (e.g., access to finance);

- Enabling all key roles in the network – Trusted Partner, energy service suppliers, and SMEs – to engage in effective cooperation with one another;
- Embedding all GEAR@SME interventions in the existing local context of SME-supplier relationships, closely involving the end users in every step.

Consequently, the four concepts of activate, organize, enable and embed are closely connected with the methodology that will be applied within the GEAR@SME project in order to induce increased energy efficiency in SMEs.

1.2 Objective and scope

This deliverable represents the first step in the GEAR@SME project: Setting the scene for capacity building on the demand and supply side. To this end, background information is provided by describing the national and local context, and by listing existing national initiatives in Europe, with similar objectives. This information serves as context to the use cases that will be performed in the project, as well as a basis for exchanging insights across countries. It includes descriptions of current energy efficiency support initiatives in partner countries, using the activate/organize/enable/ embed components. A compilation of insights into the barriers, drivers, and leverage points regarding capacity building for closing the demand-supply gap for energy efficiency in SMEs is also presented. Furthermore, an inventory is made of already available capacity building tools, trainings, education and support channels that are being used in each country and that could therefore be relevant for the use cases. Finally, an overview is provided of national policy and financial support available for SMEs. In subsequent steps in the GEAR@SME project, the information collected in this deliverable will be used as input to development of a Common Methodology and an accompanying toolset, and their implementation and testing in four use cases in the Netherlands, Germany, Italy, and Romania.

1.3 Method

The method used for the analyses described in this report is based on questionnaires for collecting information from the consortium experts in the different partner countries (see appendix A-D). These organizations have extensive expertise and experience within the area. The material provided is mainly based on earlier experience, but also on literature. The material is provided by Berliner Energieagentur (BEA) for Germany; by CertiMac, Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and CNA Ravenna for Italy; by the Netherlands Organisation for applied scientific research (TNO), Cornelissen Consulting Services B.V (CCS) and CLOK for the Netherlands; by Servelect (SVT) and Technical University of Cluj-Napoca (TUCN) for Romania; and by CIT Industriell Energi (CIT) for Sweden.

1.4 Structure of this report

The report is organized as follows: In Chapter 2, the main insights are summarized and discussed. The conclusion from this analysis is presented in Chapter 3. The analysis and conclusions are based on information and detailed descriptions provided for the respective partner countries. These more in-depth descriptions, including relevant references, are provided in the final chapters of the report: Chapter 4 (role of the SME sector), Chapter 5 (current energy efficiency support initiatives), Chapter 6 (barriers and leverage points for bridging the demand-supply gap), Chapter 7 (available tools), and Chapter 8 (policies and financial support).

In order to make the extensive material presented in this report accessible to the general reader, the report is organized in two separate parts. The first part consists of Chapters 1 through 3. Here, the approach of the study and the findings are summarized and similarities and differences between countries are highlighted. More specifically, the main overall insights are analyzed and discussed In Chapter 2, while the conclusions from this analysis are presented in Chapter 3. In the second part, consisting of Chapters 4 through 8, detailed descriptions in relation to five different areas are provided. These more in-depth descriptions are based directly on the questionnaire responses by involved organizations and all information is organized per country. All references to relevant literature can also be found in this part. Each chapter corresponds to one area in the following way:

- Chapter 4 describes the role of the SME sector in each country;
- Chapter 5 describes current energy efficiency support initiatives;
- Chapter 6 is focused on barriers and leverage points for bridging the demand-supply gap;
- Chapter 7 includes the results from the survey of available tools;
- Chapter 8 describes current policies and financial support on national and local/regional levels.

2 Analysis and discussion

2.1 The demand-supply gap for energy efficiency in SMEs

In this section, the descriptions of the national contexts in Chapters 2-4 are summarized and related to each other, highlighting similarities and differences between the countries. The purpose is to give a condensed overview of aspects impacting the gap between SMEs (the demand side) and energy service suppliers (the supply side) and potential measures that can be taken to bridge this gap. The overview is made from the perspective of how local SME energy collectives can be organized, activated and enabled by a Trusted Partner to help bridging this gap.

It should be noted that the overview not only mirrors the varying situation and context of the countries included, but of course also differences in type of experience and role of the partner organizations that have provided the background information.

2.1.1 The role and energy efficiency context of the SME sector in partner countries

Energy efficiency and a development towards more systematic energy management within SMEs contribute not only to decreasing energy costs and reductions of the overall climate impact, but also to broader sustainability targets. Acting responsibly and decreasing negative impacts on both climate and sustainability are increasingly important on the societal level, but also for industry, industry associations and, indeed, their customers. As a consequence, from a societal perspective, activities aiming at increasing energy efficiency in SMEs are motivated not only by reaching energy targets, but also climate and sustainability related targets, *and* goals for economic development and employment. Measures that, on this overall level, are cost-efficient to society may then merit economic support to SMEs for taking action. Given that improving energy awareness and increasing energy efficiency in SMEs contribute to the individual SME's economic viability, the impact on for instance employment may thus be just as important as environmental effects. Effects on the SMEs economic viability could be the result of decreased energy expenditures, but also of contributions to, for instance, process modernization, product quality, or employee health.

When looking at the types of stakeholders that are involved in energy efficiency initiatives directed at SMEs, there are large similarities between the countries at an overall level. On a more detailed level, for all countries a quite complex web of stakeholders is described. There are often national authorities developing regulatory conditions and financing various support initiatives together with public stakeholders at the regional and local levels. Energy services are provided by a range of energy service suppliers, technology suppliers and other actors that conduct, for instance, energy audits. The largest differences can be found in the role of industry associations,

in the importance of regional regulatory bodies, and in the existence of dedicated organizations that are directly governing local industrial areas.

While the role of the SME sector at a national and regional level is fairly similar between countries, there are substantial and relevant differences at sub-regional and local levels as well as from the perspective of collective approaches supporting energy efficiency in SMEs.

Firstly, if studying the sector structure at a more detailed sub-sector level there are, of course, significant differences. Secondly, the situation in each local industrial area or business park is site specific, not only depending on national and regional context, but also on the local context, including, for example, the specific companies at the location, the form of governance of the local industrial area, existing infrastructure, and availability of energy service and technology providers. Such conditions are very important to take into account when developing a specific local SME energy collective.

In particular, the organization of industrial areas where groups of SMEs are located seems to vary considerably, for instance, in terms of:

- The size and coordination of these type of areas,
- The organization and type of actors involved,
- and the level of “collectiveness” in general.

The statistics are divided differently in different countries. A detailed comparison is therefore time consuming and not relevant to the purposes of this project. For further details for respective country, see Chapter 4, The role of the SME sector in partner countries.

Further, there are differences between the countries in a number of overall national conditions and approaches that impact business parks and industrial areas and potential energy related initiatives there (see also Chapter 4 and Sections 2.1.2-2.1.3, below), for instance:

- previous experiences from initiatives including different types of collectives or networks involving SMEs and focusing on energy efficiency (see Chapter 5 for more details),
- relative focus on providing increased access to energy efficiency as a means of supporting SME business interests versus influencing SMEs to increase energy efficiency investments per se,
- relative focus on technical support for performing energy audits and identifying (technical) measures versus on improving the exchange of ideas, raising the knowledge level and encourage networking,
- the existence of financial support for SMEs and differences in the regulatory/financial situation (see also Chapter 8).

In **Germany**, there are large industrial areas, which can host over 1,000 SMEs with location based on planning procedures at municipal/regional level. Very large and energy intensive industry is often located in other areas. The organizational structure of the industrial areas vary, depending on the local context, but they are not generally organized with a formal common management. For Germany, statistics also show that the SME sector already has a significant share of total investments in climate protection.

There are extensive activities and initiatives aiming at supporting energy efficiency in SMEs, through national initiatives, which are to a large degree directed towards providing training, advice and developing a business-oriented dialogue. There are also possibilities to apply for direct funds for making use of qualified energy advice from an energy auditor. At a regional/local level, regional/local industry associations and chambers of commerce play important roles as contact points. There is also extensive experience from working with energy efficiency networks, which each include a small number of companies (both large companies and SMEs).

In **Italy**, there are 156 industrial districts, characterized by a high concentration of SMEs specialized in a specific productive sector, that have developed spontaneously. There are also designated industrial/commercial areas in which SMEs (varying from less than 50 to several hundreds of SMEs) are located. It can be purely industrial areas, or a mixture of industry, craft, services and commerce. In general, these develop gradually, but there are examples where there has been a more systematic plan from start. Both the municipalities and regional authorities play important roles, and there are often local/regional industry associations linked to the areas. However, there is usually no specifically appointed management at industry area level.

In addition to financial and regulatory measures, there are examples – such as the Roveri industrial area – where various energy efficiency initiatives linked to EU projects are directed towards SMEs. So far, a primary focus has been on increasing the number of SMEs that actually perform an energy audit for identifying and, eventually, initiating energy efficiency measures. There is a certain focus on providing financial incentives and, for the purposes above, there is direct funding available (100% of audits and 30-70% for energy efficiency measures). Most activities are directed towards individual SMEs and there is limited experience from working collectively with energy efficiency (by, e.g., setting up energy efficiency networks).

In the **Netherlands**, there are 3500 organized business parks at which the majority of SMEs are located. These are mostly linked to a local entrepreneurial organization with an appointed business park manager, who is responsible for overall park management including for instance waste management, security, etc. Through the park managements, energy efficiency initiatives can be presented to all connected SMEs at the business park. There is substantial experience with conducting collective initiatives in particular local areas, which can be rolled out to the rest of the country.

For the Netherlands, there is thus already a clear focus on further developing and strengthening this type of collective organization to other business parks.

There are, in the Netherlands, thus coordinated efforts towards developing sustainable - and more specifically energy efficient - business parks, including both more general support and information initiatives and local energy collectives. In addition to support of energy audits, networking and enabling activities, there is, in these business parks, also a focus on energy measures of a collective nature. Generally, focusing on renewable energy, such as purchasing green electricity or installation of solar photovoltaics, are popular first collective steps to take.

In **Romania**, the SME sector is, if possible, even more important since it is completely dominating the economy. There are, in total, 94 industrial parks in Romania, divided between 42 different regions. Industrial areas in Romania are mostly relatively small, but there are exceptions. The areas are not, in general, strictly planned and have a looser organization. There is an Industrial Parks Association (APITSIAR), which is dedicated to promoting sustainable development of the areas. Further, there is an active energy service supply sector in the country.

Activities and initiatives directed towards increasing energy efficiency in SMEs have, in Romania, so far been focusing on making financing of audits and measures available. Neither in the national authorities nor in the associations of SMEs, the energy efficiency subject has been addressed on a systemic level, with coordinated actions and policies. Further, they have been directed towards individual SMEs, rather than having a collective approach. Financing, for instance of energy efficiency measures, are also considered especially challenging in Romania.

In **Sweden**, there are planned industrial areas in all smaller and larger towns and cities where mostly SMEs are situated. These industrial areas are mostly relatively small (less than 100 companies) and there are in general no organized management linked to the areas. In many cases, there may be a local or regional business organization, but the activity level of these vary, and they are in general linked to an overall geographic area (region or municipality) rather than a specific industrial area. The concept of business parks is not widely used.

Energy efficiency initiatives directed towards SMEs have a clear focus on different types of enabling activities to increase the SMEs' knowledge level - including information, local/regional energy advisors, and different types of support actions. To a large extent these activities are initiated and financed by the national energy agency, although provided at a more regional level. The focus on providing financial support is less pronounced. There is a funding scheme including a grant for 50% of energy audits at SMEs, but this is currently only valid until 2021 (see also Chapter 8).During the last four years an extensive initiative on regional energy efficiency networks for SMEs with a significant energy use (**>** 1,000 MWh/year) has been rolled out (an

initiative that is now being finalized). For these networks, a requirement of performing energy audits has been included, but key issues have been on development of a structured energy management and on using the benefits of the network approach to reach results. The companies have not been co-located, which means that collective energy efficiency measures have in general not been considered.

2.1.2 The demand-supply gap in partner countries

As summarized above, there are large varieties between the countries in the overall organization of SMEs and industrial areas and in the main focus of energy efficiency initiatives. Despite this, the experience of the demand-supply gap and the barriers that create this gap are surprisingly similar. The differences are mostly limited to the relative importance or weight that are put on respective barriers in each country.

Consequently, in all countries included in this overview, the main barriers that have been identified, that contribute to the gap between the demand (SME) side and the energy service supply side, are the following:

- There is a lack of interest in energy issues from the SME side. This lack of interest ultimately results from the fact that energy is not part of the SMEs' core business, even if it may more often be expressed in terms of for instance lack of time or knowledge.
- There is a lack of knowledge on both sides as well as an unbalance in knowledge level and types of knowledge available between the demand and supply side.
    - Within the SMEs, there is a lack of knowledge about their own energy use and costs (linked to a lack of data), about the relevance (to the core business) of working systematically with energy management, about technical and organizational measures that can increase energy efficiency, about linkages to non-energy benefits (or other effects) and about available support from public means available.
    - At the energy service supply side there is often a lack of knowledge about production process related aspects (which can make the advice partly irrelevant to the SME) and other conditions for the specific SME (related to its market, financial capabilities etc), that the energy service supplier offers its services to.
- The energy service supplier may often have too narrow focus on marketing their own or standard solution(s), rather than measures that are adapted to the needs of the SME. Often there is a need for a broader, more system and business-oriented perspective, including the impact of potential multiple benefits for the SME.
- There is a lack of trust from the SME side towards the energy service supply side. The reasons can be explained by the barriers above, and thus include the commercial focus of the suppliers, i.e. that their top priority (naturally) is to sell their own product, and that they lack in understanding of the SME.
- The economic relevance to SMEs of energy audits and implementing energy efficiency measures (i.e. buying the products of the energy service suppliers) is -

or is perceived to be -limited. The costs are too high, in relation to the value for the SME. This barrier could be divided into four different situations – which are perceived in the same way by the SME, but calls for different measures:
    - The measures are cost-efficient from a societal point-of-view, but not for the SME.
    - The measures would be cost-efficient for the SMEs if all aspects were taken into account (e.g. multiple benefits) and/or the SME was knowledgeable enough to fully evaluate them.
    - The services could be performed in a more efficient and less costly way, which would make them economically interesting to the SME (and/or society).
    - Or the measures proposed are actually not cost-efficient, and taking them would not give an overall beneficial result to either society or to the specific SME – it is instead put forward by a supplier (or energy advisor) out of "habit", for ideological or personal reasons, by mistake, or from commercial interest (of the supplier).
- Even for energy audits or investments in measures that are economically interesting to the SME, there may be a lack of financing resources and access to capital for the SME.
- There is a lack of communication (on behalf of all types of actors involved in regulating or advising on energy efficiency in SMEs) that efficiently reach the SMEs (and the supply side). This is due to the amount of communication efforts, but even more to deficiencies in how these communication activities are designed.

As pointed out above, there are differences in the relative importance or weight that are put on each respective barrier in the included countries. Below, some of these varying weights are noted.

For **Germany**, the relatively low energy costs in most SMEs, in relation to the relatively high cost level of services provided by the energy service suppliers and for investments in measures, are put forward as major barriers. Consequently, for the SMEs to see an economic interest in increasing their focus on energy efficiency, a need for decreasing energy service costs is identified.

For **Italy**, the lack of interest and available resources (in terms of time and knowledge) at the SMEs are being stressed. Furthermore, among the barriers that hinder initiatives related to energy sustainability, there are bureaucratic and administrative procedures. For the **Netherlands**, focus is put on the special barriers linked to the collective approach within a business park. These include difficulties in raising interest at SMEs to participate, additional difficulties in obtaining energy data and handling these on a collective level, challenges with financing of collective measures, and bottlenecks in local network infrastructure.

For **Romania**, there is a strong focus on the challenges in financing energy-related investments, a low level of motivation for investing in energy efficiency measures and on the need for development of adequate communication.

For **Sweden**, the link between many of these barriers and *time* is pointed out - it takes time to develop a systematic and structured energy efficiency work within an SME and longer-term relations to develop trust, knowledge and a more system-oriented approach. Most support mechanisms and initiatives - not to mention the actions of energy service suppliers – are (too) limited in time to allow for this. This aspect is of course also directly linked to the aspects of cost and cost-efficiency. Apart from this, there seems to be a somewhat less strong focus on barriers linked to financing and availability of public financing support.

2.1.3 Potential drivers and leverage points to bridge the gap

The drivers and leverage points to bridge the demand-supply gap are of course directly mirroring the barriers described above. Actions are needed that can spur the interest in SMEs, increase and balance the knowledge level in both SMEs and energy service suppliers (e.g. by providing support and a link via a trusted partner), develop trust between SMEs and the supply side, decrease the cost of (especially) initial energy services to SMEs, facilitate access to financing solutions, and make communication efforts more efficient and tailored. It should be made clear, that increasing the knowledge level in SMEs about energy efficiency opportunities, firstly, does not in itself lead to that energy efficiency measures are taken; and secondly, does not necessarily or primarily aim at increasing the level of energy expertise at SMEs, but could just as well involve increasing knowledge about where and how support is available, involve them in discussions about target setting, potential cost savings or environmental benefits.

Based on the experience from local energy collectives and energy efficiency networks, such as the BE+ initiative in the Netherlands and EENet in Sweden, there is a clear potential for taking such actions more efficiently when working together in energy efficiency networks or local energy collectives for SMEs (see Chapter 5). Within such local energy collectives, actors that are considered trustworthy, knowledgeable and "neutral" can act as trusted partners, build longer-term relationships, coordinate and supply knowledge and networking opportunities for the collective. Furthermore, as demonstrated in ECUB (see 5.3.4), approaching energy efficiency and renewable energy as a collective responsibility and effort of SMEs also acknowledges that taking measures against climate change is in the interest of society as a whole.

Below, potential direct measures and activities are summarized, that have been identified within the included countries and that can be taken within such collectives to address the barriers and provide leverage to the energy efficiency work:

- Increase the system perspective of and shift the starting point from how energy efficiency can be increased to how the SME can benefit from these measures – depending on the SME's own values, priorities and targets. This may then include aspects linked to increased use of renewables, decreased climate impact, developing the market and a range of other types of benefits (economically quantifiable or not).
- Build trust through embedment in the SMEs local context, through a collective approach.
    - Create conditions for a functional and long-term organization for a local SME energy collective in an industrial area or business park.
    - Engage independent so called trusted partners (see Chapter 0), to be the link between SMEs and energy service suppliers in a local energy collective.
    - Provide arenas for SMEs and energy service supply side to meet.
    - Involve local authorities and other stakeholders in the local community.
- Create motivation and focus.
    - Motivation is expected to be a key driver and a crucial aspect for success in most energy efficiency initiatives.
    - Get to know the SMEs involved in the collective – through long-term relationships, close networking, and identification of common issues. Thereby actions can be adapted to the specific conditions, motivational drivers, and ground for trust of the local collective.
    - Set quantified common and separate targets for the energy efficiency work.
    - Develop clear agreements between actors involved in the local energy collective
    - Provide support to making funding options more accessible.
- Engage in capacity building of SMEs, that is adapted based on their size, sector and energy use, current capacity level, motivational values etc, by for instance:
    - Providing training opportunities at meetings within the local energy collectives regarding, for instance, energy management practices, the impact on the SME's business from energy use and energy costs, technical and organizational measures, multiple benefits, financing opportunities etc, particularly for the larger SMEs who have the resources to invest in such training.
    - Unburdening small SMEs and reduce their need for in-house energy efficiency competence by strengthening their ability to find and use advise and support from trusted partners and thereby facilitate for them to connect with energy service suppliers and take actions on energy efficiency.
    - Providing access to benchmark data and encourage energy audits in SMEs.
    - Utilizing the collective approach for mutual and peer learning.

    - Developing and communicating good practices and relevant examples.
- Engage in capacity building of energy service suppliers and multiplier organizations
    - Involve energy service suppliers in the activities of the energy collective and thereby provide opportunities for them to further learn about the SME perspective
    - Provide training opportunities and information to for instance entrepreneurial associations
- Measures can and should be taken to decrease the cost of identifying potential energy efficiency measures, through for instance:
    - Development of a stepwise approach, which aims at first – through very simple and low-cost tools - determining if it make sense for an SME to act on their energy use at all. Then, more detailed audits and evaluations can be made in a stepwise and adapted manner so that proposed measures are based on the capacity of the company.
    - Development and implementation of adapted tools that are easy to access and use, for different energy management tasks (energy audit, investment evaluations, templates and checklists).
    - Providing access to independent, publicly or commonly funded support and advisors that have sector specific competence- at least for the first steps.
    - Providing administrative support, related to for instance funding applications.

To be able to achieve the above, the organization of collectives, needs to take its starting point from an identification of relevant stakeholders to be included in the collective. A trusted partner needs to be identified, activated and enabled to take the role as an independent advisor. The trusted partner should organize itself such that it can serve as a bridge between the demand side (SMEs) and supply side (energy service suppliers) through capacity building activities. The support needed to build capacity of the trusted partner will need to be adapted to national, regional and local conditions of the local energy collective, including, e.g., the form of governance of the local business park, type of SMEs involved (and their key motivational drivers), and main barriers to energy efficiency that need to be addressed in the local and national context. On top of that, the process of locally embedding the activities should take into account the specific details of the formal as well as the informal structures at the local business park (e.g., existing social ties between the companies), which can vary greatly as the examples in Chapter 5 have shown. However, the list above provides a set of key activities that have proven successful in setting up energy efficiency initiatives, which can therefore be used as guiding principles in such capacity building efforts.

2.2 Successful tools, support channels, education and training

The overview activity of energy audit tools, training and educational tools and support channels resulted in the collection of 73 tools (see also Table 1 and Figure 2), of which:

- 25 Energy Audit tools,
- 22 Training/Educational tools,
- 10 Support Channels,
- 16 Other type of tools.

This represents a very satisfying result in the view of the next project activities foreseen about the tools themselves: choosing the best ones, integrate-adapt-further develop them (whether necessary), then making them available to (collective of) SMEs - through the GEAR@SME online platform - under the form of a unique and comprehensive process/toolset per use case.

Table 1 A grid summarizing the 73 tools according to the Tool Category they fall in and per country where they have been developed.

Country	Number of tools		Tool Category			
			Energy Audit tools	Training/ Educational tools	Support channels	Other
Netherlands	35		12	12	1	10
Romania	8		5	2		1
Germany	4	of which	3		1	
Sweden	18		2	6	5	5
Italy	8		3	2	3	
TOTAL:	**73**		**25**	**22**	**10**	**16**

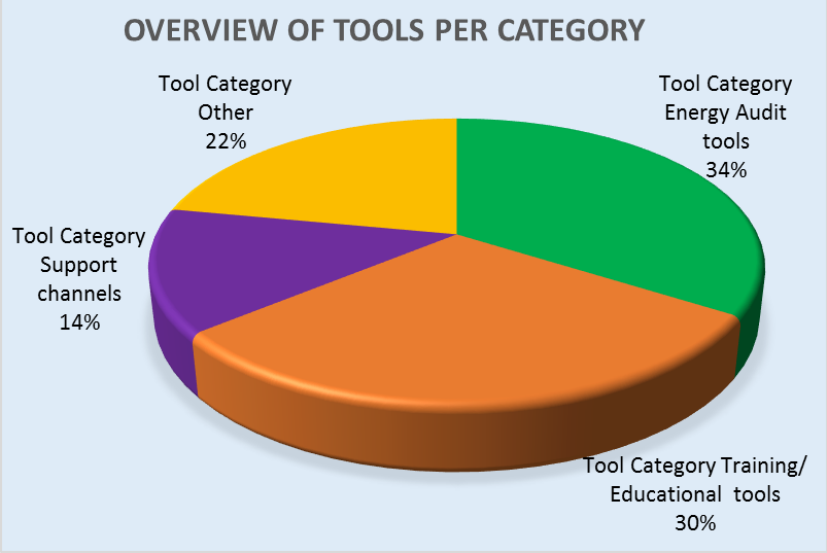


Figure 2 Overview of the relative shares (in percentage) of tools per category.

There is a general balance of tools availability with reference to their *Category*, in fact Training/Educational tools represent 30% of the 73 available ones, while Energy Audit tools account for 34% and Other type of tools count for 22%. Support Channels represent only 14% of collected tools, which confirms the necessity of stakeholders such as the Trusted Partners in GEAR@SMEs who can give advice and fundamental guidance to SMEs. As for the 16 Other type of tools, they are very specific ones and cannot be comprised in the main categories. Examples include the Dutch Quick-scan Tool *"Wood combustion feasibility scan",* which enables an SME to find out whether a biomass boiler is feasible; the Dutch *"Energy team assembler"* Process Tool enabling Business Park Managers to create an energy team with sufficient support and capabilities to carry out a successful "collective" intervention; or the Swedish guidebook *"Företagets energitrappa"* that can be used as reference by any SME to carry out a self-assessment of the company level of energy-management practices and gives useful hints on how to organise structured and systematic procedures to deal with energy efficiency. Other examples: a tool to be used by Park Managers to efficiently draft an implementation plan, a questionnaire to measure the interest of SMEs in a collective energy project, a checklist for contracting suppliers.

As a whole, the range of tools available points out - at a glance - how much effort has been made in the last years in Europe within both research projects and policy support programs in order to co-fund the implementation of concrete and targeted solutions/instruments that could trigger the overcoming of cultural, social and economic barriers in the market uptake of Energy Efficiency measures. Many efforts, as well, have been made to develop thorough awareness-raising training actions aimed at closing companies' and stakeholders' skills gaps and/or skills shortages towards energy-saving interventions.

In particular, the 73 tools and support channels listed, have been developed in the following frameworks:

- 11 within research projects,
- 33 within policy support programs and initiatives, at local and national level,
- 29 under project partners' own/internal initiative.

As described in Section 7.1, the aim of the gathering activity was to search tools to be made available during project pilot actions (use cases) as core support to implement the GEAR@SME innovative methodology of *Activating, Organizing, Enabling* SMEs and suppliers of energy-saving measures for mutual cooperation towards increased energy efficiency. In Table 2, the tools have instead been categorized according to the scope of the tools, according to this logic.

Table 2 A grid summarizing the tools according to the logic of Activating, Organizing and Enabling.

Country	Number of tools		Scope of the tools		
			Activate	Organize	Enable
Netherlands	35		8	4	23
Romania	8				8
Germany	4	of which →			4
Sweden	18		3		15
Italy	8		2		6
TOTAL:	**73**		**13**	**4**	**56**

Each tool and support channel has one primary *scope*, even though for some of them, the complete scope may be twofold or even threefold. One example is the support channel *"FIRE"* (the Italian Federation for Rational Use of Energy) aiming to:

- Favour and activate the energy culture through dissemination of information and good practices among different stakeholders (*Activating*),
- Establish and coordinate relations among institutions, associations and groups who operate in the energy sector (*Organizing*), so to develop common initiatives, and
- Identify and guide towards new technologies and measures that can contribute to increased energy efficiency in enterprises (*Enabling*).

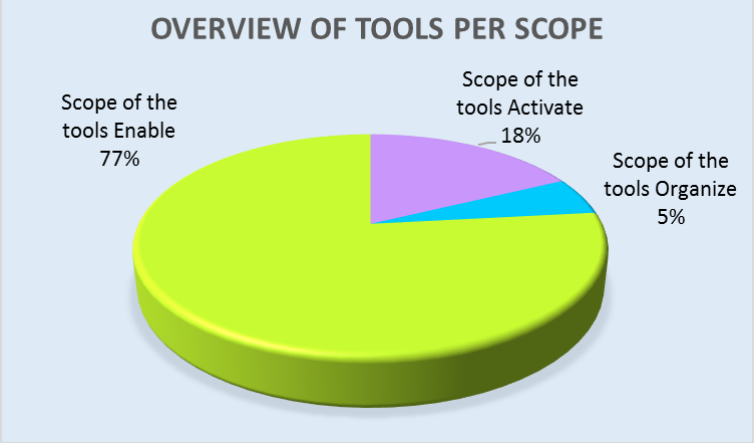


Figure 3 Overview of the relative shares (in percentage) of tools categorized by their primary scope.

As much as 77% of available tools are devoted to *Enabling* actions, while less than a quarter (18%) can be used in *Activating* initiatives and only 5% of them are developed to support *Organizing* actions. The low share of organizing tools, again confirms that the focus on connecting demand and supply sides of energy efficiency measures through intervention of third parties (the Trusted Partners) can be considered a relatively "new" concept that needs to be further triggered. What is more, the only four organising tools collected originate from the Netherlands, which can thus be considered as front runner country towards the others as for initiatives dedicated to local communities of SMEs. A pivotal role of Netherlands is also confirmed by the number of tools targeted to collectives of SMEs that have been developed, in comparison to the other project countries. It is expected, for these reasons, that Netherlands will transfer to the consortium - during project lifetime - best practices on how Trusted Partners can be enabled and empowered to manage (*Organize*) future *Enabling* activities towards SMEs and energy service suppliers.

Table 3 Summary of the entire tools overview, according to their primary scope.

ACTIVATING TOOLS				
N°	**COUNTRY**	**TOOL CATEGORY**	**CAPACITY BUILDING TOOL**	**TOOL NAME or SUPPORT CHANNEL NAME**
1	Italy	ENERGY AUDIT TOOLS	///	ENEA Efficiency 1.0
2	Italy	SUPPORT CHANNELS	///	Education/Training about energy for youngsters, entrepreneurs, technicians
3	Netherlands	ENERGY AUDIT TOOLS	Yes	Energy Potential Scan for Business Parks (EPS)
4	Netherlands	TRAINING TOOLS	Yes	Masterclass Quick-scan DE (Duurzame Energie)(ENG:

ACTIVATING TOOLS				
N°	**COUNTRY**	**TOOL CATEGORY**	**CAPACITY BUILDING TOOL**	**TOOL NAME or SUPPORT CHANNEL NAME**
				Masterclass Quick-scan SE (Sustainable Energy))
5	Netherlands	TRAINING TOOLS	Yes	ECUB Handboek aanpak collectieve verduurzaming bedrijventerreinen
6	Netherlands	TRAINING TOOLS	Yes	Quick guide for collective sustainability measures on business parks
7	Netherlands	TRAINING TOOLS	Yes	Quick guide for collective financing of sustainability measures on business parks
8	Netherlands	TRAINING TOOLS	Yes	Description of Best practices
9	Netherlands	TRAINING TOOLS	Yes	Collective financing ESco tool
10	Netherlands	OTHER	Yes	Example questionnaire for collective sustainability measures on business parks
11	Sweden	OTHER	Yes	Self-assessment tool for energy management
12	Sweden	OTHER		Templates for action plans
13	Sweden	TRAINING TOOLS	Yes	Inspiration movies, good examples

ORGANIZING TOOLS				
N°	**COUNTRY**	**TOOL CATEGORY**	**CAPACITY BUILDING TOOL**	**TOOL NAME or SUPPORT CHANNEL NAME**
1	Netherlands	TRAINING TOOLS	Yes	Value Creation Canvas (part of Value Case Methodology)
2	Netherlands	OTHER	Yes	Energieteam assembler
3	Netherlands	OTHER	Yes	Example Covenant for collaboration on sustainability
4	Netherlands	OTHER	Yes	Example of Implementation plan

ENABLING TOOLS				
N°	**COUNTRY**	**TOOL CATEGORY**	**CAPACITY BUILDING TOOL**	**TOOL NAME or SUPPORT CHANNEL NAME**
1	Germany	ENERGY AUDIT TOOLS	///	Energiebuch E-Tool / Energybook E-Tool
2	Germany	ENERGY AUDIT TOOLS	///	Wertsteigerung_EnKoMa-DIALOG / Added value (of energy efficiency measures)
3	Germany	ENERGY AUDIT TOOLS	///	Wirtschaftlichkeit LEG / Profitability LEG - Tool
4	Germany	SUPPORT CHANNELS	Yes	List of energy auditors
5	Netherlands	SUPPORT CHANNELS	///	RVO website
6	Netherlands	ENERGY AUDIT TOOLS	Yes	SME Energy CheckUp
7	Netherlands	ENERGY AUDIT TOOLS	///	Filter Erkende Maatregelen Energiebestaring (FEM-tool)
8	Netherlands	ENERGY AUDIT TOOLS	Yes	Milieubeheer programme
9	Netherlands	OTHER	Yes	Wood combustion feasibility scan
10	Netherlands	ENERGY AUDIT TOOLS	Yes	Quickscan Duurzame Energie, voor de industrie (ENG: Quick-scan Sustainable Energy for the industry)
11	Netherlands	ENERGY AUDIT TOOLS	Yes	Wetchecker energiebesparing (ENG: Law check Energy Savings)
12	Netherlands	ENERGY AUDIT TOOLS	Yes	Energiebesparingsverkenner Kantoren (ENG: Quickscan for Energy Savings in Office Buildings)
13	Netherlands	ENERGY AUDIT TOOLS	Yes	(Energy Performance Contract) EPC Precheck
14	Netherlands	ENERGY AUDIT TOOLS	Yes	Verkenning restwarmtebenutting (ENG: Quickscan Residual Heat Utilization)
15	Netherlands	ENERGY AUDIT TOOLS	Yes	WKO-Tool (ENG: Heat and Cold storage tool)
16	Netherlands	ENERGY AUDIT TOOLS	Yes	Energy System Simulator (ESSIM)
17	Netherlands	ENERGY AUDIT TOOLS	Yes	Flex Scan
18	Netherlands	TRAINING TOOLS	Yes	Four types of entrepreneurs

ENABLING TOOLS				
N°	COUNTRY	TOOL CATEGORY	CAPACITY BUILDING TOOL	TOOL NAME or SUPPORT CHANNEL NAME
19	Netherlands	TRAINING TOOLS	Yes	Example business propositions for four collective actions
20	Netherlands	TRAINING TOOLS	Yes	Instruction for the design of flyers for door-to-door communication to SMEs
21	Netherlands	TRAINING TOOLS	Yes	Marketing tips for communication with the four types of entrepreneurs
22	Netherlands	TRAINING TOOLS	Yes	Training for Park Managers
23	Netherlands	OTHER	Yes	Business case tool for four collective actions
24	Netherlands	OTHER	Yes	Checklist contracting suppliers
25	Netherlands	OTHER	Yes	Supplier selection tool
26	Netherlands	OTHER	Yes	Example of tender document
27	Netherlands	OTHER	Yes	Checklist for the contract with SMEs
28	Romania	ENERGY AUDIT TOOLS	///	PINE AUDIT TOOL
29	Romania	ENERGY AUDIT TOOLS	///	Energy Analytics
30	Romania	ENERGY AUDIT TOOLS	///	PV generation
31	Romania	ENERGY AUDIT TOOLS	///	CHP (combined heat and power) generation
32	Romania	ENERGY AUDIT TOOLS	///	Energy Balances
33	Romania	TRAINING TOOLS	///	Monitoring & Targeting
34	Romania	TRAINING TOOLS	///	Measurement & Verification
35	Romania	OTHER	///	MOVI
36	Sweden	ENERGY AUDIT TOOLS	///	Life cycle cost calculation tool
37	Sweden	ENERGY AUDIT TOOLS	///	Template for monitoring and follow-up of key performance indicators for company energy use
38	Sweden	TRAINING TOOLS	Yes	Guidebooks for energy efficiency in SMEs
39	Sweden	TRAINING TOOLS	Yes	On-line web course about energy efficiency
40	Sweden	TRAINING TOOLS	///	Energilyftet

ENABLING TOOLS				
N°	**COUNTRY**	**TOOL CATEGORY**	**CAPACITY BUILDING TOOL**	**TOOL NAME or SUPPORT CHANNEL NAME**
41	Sweden	TRAINING TOOLS	///	Energibyggare
42	Sweden	TRAINING TOOLS	///	Save energy in small industries, Save energy in offices
43	Sweden	OTHER	///	A tool for added values from energy efficiency
44	Sweden	OTHER	///	Checklists for decisions about prioritization and financing of energy efficiency measures
45	Sweden	OTHER	Yes	EENet internal collaboration site
46	Sweden	SUPPORT CHANNELS	Yes	BELOK
47	Sweden	SUPPORT CHANNELS	Yes	Swedish Energy Agency's web portal for Energy efficiency support to SMEs
48	Sweden	SUPPORT CHANNELS	///	ICHB Theme: Energy
49	Sweden	SUPPORT CHANNELS	///	Jernkontorets energy guide
50	Sweden	SUPPORT CHANNELS	Yes	Guide for energy efficient companies
51	Italy	ENERGY AUDIT TOOLS	///	SET
52	Italy	TRAINING TOOLS	Yes	Guidelines for energy audits in SMEs
53	Italy	TRAINING TOOLS	Yes	Technical guidelines and seminars for energy audits in SMEs
54	Italy	ENERGY AUDIT TOOLS	///	SME Energy Check-UP
55	Italy	SUPPORT CHANNELS	///	ENEA - Agenzia Nazionale Efficienza Energtica
56	Italy	SUPPORT CHANNELS	///	FIRE - Federazione Italiana per l'Uso Razionale dell'energia

As just mentioned above, when analysing the number of tools targeted to collective of SMEs (in total 27 tools) and making a comparison with those dedicated to individual SMEs (45 tools)[1], it may seem that a general balance in the availability of the two types is ensured (collective 37,5% and individual 62,5%), which is promising for the GEAR@SME focus at addressing collectives of SMEs. Yet, a more in-depth analysis

[1] One of the 73 tools has been labelled as "not rankable" according to this criterion.

highlights that 24 of the 27 tools for collectives of SMEs have been developed and are used in the Netherlands. At the same time, only in this country many *beneficiaries* (see below) of the tools are park managers. This may indicate that the GEAR@SME has a larger role to play in developing proper collective tools and strategies in Germany, Italy, Sweden, and Romania, and that the Netherlands has the potential to act as a "guide" to the others through the concept of approaching SMEs not individually but in groups (whether being part of a park or just geographically located in the same area).

Table 4 Summary of the 63[2] gathered tools according to their Typology (see Chapter 7 for definitions).

Country	Number of tools		Tool Typology						
			ASSESSMENT TOOLS	SELF ASSESSMENT TOOLS	ENERGY MANAGEMENT TOOLS	MONITORING TOOLS	PROCESS TOOLS	QUICK SCAN TOOLS	BUSINESS CASE TOOLS
Netherlands	34			5			20	7	2
Romania	8	of which		6	1	1			
Germany	3			1		2			
Sweden	13		1	1	4	1	6		
Italy	5		2	3					
TOTAL:	**63**		**3**	**16**	**5**	**4**	**26**	**7**	**2**

The variety of tool typologies available among countries and in the project, is encouraging. When it is time to create a toolset for SMEs involved in use cases, project partners are likely to have a substantial mix at their disposal to get the comprehensive adapted combinations needed. Here again, the 20 Process tools from the Netherlands can contribute to paving the way for the other partners. The shared availability of Self-Assessment tools in all the countries are especially promising. On the other hand, the low availability of Energy Management tools and Monitoring tools seems to suggest that project partners may need to search also at European level for this type of tools, outside the five project countries.

There is a last interesting observation about the Tools which refers to *Beneficiaries* and *Users*:

- Beneficiary(ies) of a tool are those for whom the tool has been designed and to whom the tool has been addressed, i.e., those who will benefit from the application and the results provided by the tool itself. They can differ in their professions: in SMEs for example, they can be either responsible of energy efficiency in the company (such as an Energy Manager) and boardroom members (CEO, CTO, etc.). The public sector and local authorities can be

[2] The 10 support channels are excluded from this categorization because it does not apply to them.

considered as beneficiaries in relation to their support of the energy efficiency enhancement of SMEs.

- User(s) of a tool are people who concretely use the tool, complete the data and make the analysis. They have the capability to analyse and evaluate the results/outputs provided by the tool. For example: a tool may have boardroom members in the SME as beneficiaries, but the user may be the energy manager or an external expert (supplier).

The users and the beneficiaries of a tool may be the same people.
Since many tools have double *beneficiaries* and/or *users,* the rationale of analysing numbers according to all the 73 tools collected does not apply here. As a whole:

- Trusted Partners are *beneficiaries* of 16 and *users* of 10 tools,
- SMEs are *beneficiaries* of 72 and *users* of 70 tools,
- Suppliers of energy services are *beneficiaries* and *users* of 16 tools, and
- Regional and local authorities (the public sector) are *beneficiaries* of 6 and *users* of 8 tools.

The 72/70 tools targeted at SMEs versus only 16/16 tools for suppliers of energy services indicates that the main focus until now has been on the development of supporting tools for SMEs, both in research projects and other funded activities such as the GEAR@SME project. It must be noted here that the tools collected for this overview were only allowed inclusion if they are freely available/accessible. Many tools developed for energy service suppliers do not live up to this criterion, either because they are tools that are being commercially exploited by third parties or because they are tools that these energy service suppliers have developed themselves and exploit as part of their business. The few number of tools targeting Trusted Partners (16/10) is not surprising, because it is well established that their full active role in the energy efficiency domain is a new “mission” (that GEAR@SME intends to develop).

In Sweden there are noteworthy tools targeting the public sector as beneficiary and user (6 tools), such as the one demonstrating with nice graphs and images the added values of energy efficiency in terms of increase in public health, reduction of greenhouse gas emissions, and contribution to social and economic sustainability.

In Romania, all the eight tools gathered target (among others) suppliers of energy services. Even though they foresee that the companies enter their consumption data, the tools are very simplified and can be used as “entry” instruments to show entrepreneurs - with very low effort from both parties - the saving potential of further analysis to concretely evaluate the possibility to implement energy efficiency measures. Therefore, these tools perfectly match the requirement of the GEAR@SME project of delivering free-of-charge tools to the demand and supply sides so that they can finally meet and cooperate.

2.3 Successful policies and finance schemes

When looking at the political framework provided in the five countries examined, it is striking that in four of the five countries, there are only few obligations for SMEs to directly promote energy efficiency. Most requirements come from indirect obligations, that is from legislating concerning the buildings that are used by SMEs, or from environmental law. The one big exception is the Netherlands, which has introduced an obligation for companies consuming annually more than 50,000 kWh electricity or 25,000 m³ natural gas or equivalent, to take all energy saving measures with a payback period of five years or less as part of the Environmental management Act (Dutch: Wet milieubeheer). A number of measures that are considered to be economic under these conditions have been defined for different sectors. Furthermore, the companies that fall under this law are obliged to report which measures they have taken. This law obliges companies that have a considerable energy consumption to take on the issue of improving their energy efficiency, obliging them to take measures, without imposing measures that are economically not feasible. At the same time, it should be noted that these obligations have been introduced only recently, so there is little practical experience with the effects and success of this approach.

In none of the other countries, there is such a far-reaching obligation for SMEs to act on energy efficiency, for example to conduct energy audits. In some countries, there are obligations for large consumers of energy, sometimes linked to obtaining tax breaks. Thus, all countries except for the Netherlands pursue more or less the same political approach: Little or no direct obligations to improve energy efficiency in SMEs, but instead provide incentives and funding. For most of these programs, there are no numbers available as to how many SMEs make use of the program. Also, for those programs where numbers are available, it is difficult to identify a programme that has proven very successful.

The programme that seems the most successful is the White Certificate programme in Italy, as it is aimed at achieving large energy savings, and seems to be accomplishing these. At the same time, it is a very elaborate program, so it seems very challenging to transfer this programme to other countries.

Taking the GEAR@SME approach into consideration - putting an emphasis on activating and giving the SMEs the means to pursue energy efficiency together with other SMEs - the following incentives and funding programs can be considered successful approaches:

- Financial support schemes supporting energy audits (in most countries): This approach supports SMEs in taking a first step to improve their energy efficiency, by providing them with an assessment of their energetic situation and potential for savings, with asking little initial investment from the SME.
- Supporting energy efficiency networks (Germany and Sweden): This approach, although mostly attractive for large consumers of energy, supports the initiating

and running of energy efficiency networks, thus companies going through a process towards energy efficiency together. This programme corresponds very much to the GEAR@SME approach and has proved to produce considerable savings within the participating companies.

3 Conclusions

The key conclusions from the review of relevant partner country conditions are related to which drivers and leverage points are most important to close the demand-supply gap between SMEs and energy service suppliers, the need for appropriate tooling to close this gap, and which policies and finance schemes that may successfully contribute. The potential explanations to the demand-supply gap between SMEs working with energy efficiency and energy service suppliers described here are based on experience from GEAR@SME partner organizations.

Energy efficiency directed to the needs of SMEs
Increased energy efficiency in SMEs is important from an overall societal perspective. Support activities to SMEs need therefore to be designed with the societal interest in mind, in such a way that it is feasible for individual SMEs to contribute while at the same time maintaining a healthy business. It is therefore also important that activities have an integrated approach, acknowledging the strong linkages to climate emission reductions, renewable energy, sustainability and economic development. Further, they need to be directed towards the needs and interest of the SMEs.

Large variations in the organization of SMEs
There are many similarities between the partner countries when it comes to the role of the SME sector as an important part of the economy, characterized by a large number of companies. However, there are large variations in the organization of SMEs, particularly in the role of business parks or industrial areas and their governance and structure, which make it important to adapt activities and measures to the national, regional and local contexts.

A wide array of barriers contribute to the demand-supply gap
In all countries, the main barriers are related to lack of interest (or ability to prioritize) from the SMEs (demand side), lack of knowledge in both SMEs and energy service suppliers, need for more business-oriented systems perspective, lack in trust between demand and supply side, limited (perceived) cost efficiency or economic relevance to the SMEs, lack of financing, and inefficient or lacking communication. There are, however, differences between the countries regarding which barriers are perceived as most important. While in Germany and Romania there is a relatively strong focus on financial barriers, the Netherlands and Sweden have a relatively stronger focus on organizational barriers. Italy focuses not so much on either of these, but rather on administrative procedures and bureaucracy as barriers combined with lack of time and knowledge at SMEs.

Even more so, there are important conditions, such as the type of SMEs and how they are organized, that are specific to the local situation of a specific industrial area

and the SMEs that are located there. These aspects – national and local – need to be considered when designing measures to bridge the demand-supply gap.

A collective approach has proven useful in decreasing these barriers
Experiences from energy efficiency networks in Germany and Sweden and initiatives for energy efficiency in business parks in the Netherlands, reveal that collective approaches have a potential to be successful since they can be organized to efficiently address the most important barriers to energy efficiency. For the EENet initiative in Sweden, for example, evaluations have shown that targets for energy efficiency improvements have been met (which were set under the assumption that networking would contribute to implementation), that SME capabilities and energy management "levels" have increased and that trust and collaboration have developed positively. Initiatives such as BE+ and ECUB in the Netherlands have demonstrated ability to address information deficits in SMEs (for example, doubts about which regulations apply to them), to connect SMEs to energy service suppliers, to address financing issues, and to stimulate investments in renewable energy (e.g., a project in which SMEs jointly place solar panels on their rooftops).

By setting up local SME energy collectives, it is possible to build relationships and – in the long run – trust, combine resources, and coordinate knowledge transfer. The use of a trusted partner builds on the fact that lack of trust from the SMEs towards the energy service supply side, lack of resources and a knowledge gap are identified as important barriers. An independent intermediary between energy service suppliers and SMEs can serve as support to SMEs and as a "broker" between demand.

A key element of such an approach is to motivate the SMEs to actively participate. Here, the embedment in the local context is important for understanding the motivational drivers for the SMEs, which should be linked to the potential value of energy efficiency for the companies – in terms of energy cost reductions as well as non-energy benefits.

In total 73 tools have been identified and categorized – most of them support enabling of actors
The first collection and overview of available tools contribute to the concretization of the goals that have been set for the use cases (see Figure 1). With reference to the categorizations of the 73 gathered tools according to the Activate-Organize-Enable logic, which is at the core of the methodology that will be applied within the GEAR@SME project: 77% of them are dedicated to enabling actions, 18% can be used in activating initiatives and only 5% support organizing activities. This confirms that the project strategy of connecting demand and supply sides of energy efficiency measures by means of third parties - the Trusted Partners - is a real need to be met.

Tools aiming at supporting organisation and activation are mainly identified in the Netherlands

The 45 tools targeted to individual SMEs demonstrate that Germany, Italy, Sweden, Romania, still have a long way to go in approaching small and medium companies not singularly but as a group (collective). This is confirmed by the notion where most of the tools addressed to collective of SMEs are located, in fact 24 out of 27 of them have been developed and used in Netherlands.

The few number of tools designed to activate SMEs (13 tools) seems to drive project partners efforts towards finding customized ways or new tools - even outside the consortium and project countries - to show entrepreneurs how far their company's energy needs are from performing in comparison to the economic sector in which they operate. Consequently, showing the extent of possible reductions in energy costs and the company's environmental footprint will contribute to the creation of a solid energy culture in small entrepreneurs and their employees.

The four organizing tools that were identified were all from the Netherlands, which puts them in the position of having a pivotal role in transferring to the consortium - during project lifetime - qualitative best practices on how Trusted Partners can be empowered to manage enabling activities towards SMEs and energy services suppliers.

Next project phases, related specifically to development of tools, will focus on making tools available for use by Trusted Partners, SMEs and suppliers of energy services. Even though enabling tools also are predominantly available, the importance of the activating and organizing activities of the methodology should not be underestimated - in particular in Germany, Italy Sweden, Romania where there are almost no tools with these two scopes.

The tools survey will provide the basis for final development of an adapted project toolset

The variety of tools available among countries and in the project will be exploited to get a comprehensive adapted combination of them within the toolset. As well, the low availability of Energy Management and Monitoring tools could require project partners to search for some additional ones at a wider European level (outside the consortium).

In conclusion, despite the above-mentioned emerging challenges, the overview represents as a whole a very satisfying start-up result that will leverage next project activities of choosing the most promising tools, and then integrate, adapt and/or further develop them, depending on the needs identified. The last step will then be to make the upgraded versions available to local energy collectives and SMEs via the GEAR@SME online platform.

Policies in most of the examined countries focus on motivating and supporting efforts by SMEs to reduce energy consumption rather than obliging them

All countries examined have committed themselves to the climate targets of the European Union, and are therefore obliged to reduce CO_2 emissions. They all have the aim to reduce the energy consumption in SMEs. All countries, with the exception of the Netherlands, focus on motivating and financially supporting SMEs that take energy efficiency measures, instead of obliging SMEs to improve their energy efficiency. In Italy, Germany, Romania and Sweden, for most SMEs there are no direct obligations to improve their energy efficiency. They are only obliged to respect a minimum standard, derived from standards regarding the use of energy, most importantly for buildings. In Germany and Italy, only SMEs that have a large energy consumption are in some cases required to take on the issue of energy efficiency. Only the Netherlands oblige a large number of SMEs to act on energy efficiency, as SMEs with a relevant energy consumption are required to take measures and report on them. This law has not yet been applied long enough to be able to assess its effect on energy efficiency, but the approach seems to strike a good balance between obliging SMEs to act, while keeping in mind that efforts for energy efficiency need to be economically feasible.

The voluntary basis of most policies renders appropriate initiatives and suitable funding schemes even more important

Apart from the Dutch SMEs that fall under the law mentioned above and the minimum standards to be respected, it is the choice of every individual SME if and how they decide to improve their energy efficiency. This approach will most likely limit the number of SMEs that will take measures, and the extent to which SMEs will reduce their energy consumption. This approach will also make initiatives and funding schemes even more important, as these will be key elements in motivating SMEs to act on energy efficiency.

Most countries support energy audits, which will for most companies be the first step when taking up the issue of energy efficiency. The support of energy audits seems very valuable for motivating the SMEs, as it allows them to get an assessment of their energetic situation and possible measures to improve their energy efficiency, with a low initial investment. All countries also support the implementation of energy efficiency measures. This should be an incentive for SMEs to act, provided that the funding is attractive enough, and is not too complicated to obtain. From what is mentioned in a few countries, obstacles seem to be that SMEs are not necessarily aware of these support schemes, and perceive the application procedure to be too complicated. It should therefore be ensured that either the Trusted Partner or the ESCOs involved is well informed of funding schemes and application procedures.

A gap in current funding schemes is support to joint efforts of SMEs

The funding schemes thus address important issues, considering that one of the barriers for SMEs to take on energy efficiency is a lack of knowledge and time.

Ideally, these funding schemes will build on each other and lead an SME through the different steps of improving energy efficiency. What most funding schemes do not address are joint efforts by SMEs. There is no funding available for the running of energy efficiency networks, nor for joint efforts to build up know-how in SMEs. Considering that energy efficiency networks have proven to be successful, it would be worth addressing this approach also in funding schemes.

In conclusion, regarding policies and funding schemes, policies in most of the countries examined focus on motivating and supporting efforts by SMEs to reduce energy consumption. Only in the Netherlands are a large number of SMEs obliged to act on energy efficiency. The existing funding schemes cover important aspects improving energy efficiency in SMEs, but especially for joint efforts by SMEs, funding does not seem to be available.

4 The role of the SME sector in partner countries

This chapter presents a short overview of the SME sector in the different countries, such as size of the SME sector in relation to overall economy, dominating industry and service sectors and main stakeholders involved in energy efficiency in SMEs. The questionnaires on which the contents of this chapter is based can be found in Appendices A and B.

According to EU recommendation 2003/361, micro-enterprises are enterprises with less than 10 employees and a turnover of the annual account less than 2 million Euro or a balance sheet total of less than 2 million euro. Small enterprises are enterprises with less than 50 employees and a turnover of the annual account less than 10 million Euro, or a balance sheet total of less than 10 million euro. Medium-sized enterprises are enterprises with less than 250 employees and a turnover of the annual account less than 50 million Euro, or a balance sheet total of less than 43 million euro.

4.1 Germany

SMEs account for a very large share of enterprises in Germany. The dominating SME sectors are trade, construction, hotels and restaurants.

4.1.1 Size of the SME sector and dominating industry segments

Almost all enterprises in Germany are SMEs (99.4%). 82% of enterprises in Germany are micro enterprises (2.13 million), 15.1% small enterprises, 2.5% medium-sized enterprises and 0.6% large enterprises. SMEs in Germany account for about one third (30%) of total turnover. In contrast, large companies in mining, manufacturing, energy supply, trade, transport, and warehousing, as well as in the information and communication sector, generated higher turnover than SMEs. The majority of the employees in Germany work for SMEs (60.08%).

The importance of SMEs varies according to the sector. In Germany most of the turnover is generated in trade (719.75 billion euros) as most SMEs are active in the trade sector (578,004). SMEs also play a particularly important role in construction and hotels and restaurants. In 2018 they accounted for around 78% of turnover and employed around 88% of the workforce in the construction sector. In the hotel and restaurant industry SMEs account for the largest share of turnover (79.9%). The economic sector with the lowest share of small and medium-sized enterprises was energy supply with SMEs accounting for around 4% of turnover (*Destatis*, 2020; *Statista*, 2020).

SMEs are often located in large industrial areas, which can host over 1,000 SMEs. The location and structure of these areas are based on planning procedures at municipal/regional level. Very large and energy intensive industry is often located in other areas. The development and organizational structure of the industrial areas vary and can for instance be linked to business development programmes, through own initiatives or are initiated and maintained by industrial estate managers. They are, however not generally organized with a formal, common management.

4.1.2 Important stakeholders

The most important stakeholders for Energy efficiency in SMEs in Germany are the Federal Ministry for Economic Affairs and Energy, the municipalities, and national, local and regional climate agencies. The Federal Ministry for Economic Affairs and Energy holds an Energy Efficiency Plattform (*Bundesministerium Für Wirtschaft Und Energie*, 2020) managed by the German Energy Agency (Dena) and the Institute for Energy Efficiency in Production (EEP) of the Stuttgart University.

The organisation of SMEs in business parks depend on the local structures. They may be linked to business development programmes, for example, or may have been created through own initiatives by the SMEs or may be initiated and maintained by industrial estate managers. There is no national structure for business parks, though. For Germany, the first two initiatives described in Chapter 5 are national, and some of the most relevant stakeholders are therefore further described there.

4.1.3 Other relevant information – Investments of SMEs into climate protection

In 2016, companies in the manufacturing sector (excluding construction) in Germany incurred €3.3 billion in ongoing expenditure on climate protection. This corresponds to 10.5% of the costs of €31.8 billion incurred by companies for overall environmental protection. Just under half of these current expenses in total were incurred by companies through the operation of waste management facilities or the use of such services. Climate protection includes measures to use renewable energies, increase energy efficiency and avoid Kyoto greenhouse gases.

Companies with the economic focus on energy supply accounted for more than two thirds (68.8% or €2.3 billion) of climate protection expenditure. The operation of climate protection facilities such as biomass cogeneration plants accounted for almost the entire expenditure here, at 2.2 billion euros. At 0.9 billion euro, energy consumption (e.g. of fuels) again accounted for the highest costs in terms of plant operation.

Companies with 50 to 249 employees (€0.9 billion) accounted for 40% of climate protection expenditure in the energy supply sector. Almost 30% each came from companies with 250 to 499 employees and companies with 500 or more employees. In 2018, companies in the manufacturing sector (excluding construction) invested €2.4

billion in climate protection in Germany. This was just under a quarter (23 %) of total investment in environmental protection. These are investments in facilities that serve to reduce, prevent or eliminate emissions into the environment or enable a more careful use of resources.

Almost half of the climate protection investments of SMEs was spent for the use of renewable energy. The bulk of the investments in climate protection, 1.1 billion euros (45.1%), was spent on measures to use renewable energies. These include wind turbines and photovoltaic systems. A further €1.0 billion was invested in measures to increase energy efficiency and save energy, including the thermal insulation of buildings or combined heat and power plants. Although investments in measures to avoid and reduce greenhouse gases in accordance with the Kyoto Protocol are comparatively low at around 289 million euros, they are just as valuable in terms of the environment and climate. This includes, for example, replacing conventional air conditioning and refrigeration systems with systems using halogen-free refrigerants. The highest investments in climate protection were made by companies in Baden-Württemberg (463 million euros or 19.2%), Berlin (454 million euros or 18.8%) and North Rhine-Westphalia (387.2 million euros or 16%).

In 2018, industrial companies in Germany will have invested a total of 10.5 billion euros in tangible assets for environmental protection. Of the total investment by companies in the manufacturing sector (excluding construction) in Germany (91.3 billion euros) in 2018, just over one in ten euros went into environmental protection (11.5 %). Two thirds of all investments for environmental protection (7.0 billion euros or 66.3%) were made in measures in the traditional environmental sectors of waste water management (4.4 billion euros or 41.4%) and waste management (2.6 billion euros or 24.9%), which include, for example, investments in plants to reduce the volume of waste water or for waste processing and disposal.

4.2 Italy

The contribution of SMEs in Italy extends beyond the economic aspect and occupies a prominent place in Italian cultural and social life.

4.2.1 Size of the SME sector and dominating industry segments

There are about 5,3 million SMEs in Italy that together employ over 15 million people and generate a total turnover of 2.000 billion euros. SMEs employ 82% of workers in and represent 92% of active enterprises (from calculations are excluded dormant companies with zero turnover). SME activities are concentrated in the services, construction and agriculture sectors (72% of SME employees in Italy). In addition, it is worth noting that SMEs play a fundamental role in the economy of some territories. For the southern regions, for example, SMEs represent 83% of production, compared to an average national contribution of 57%. Small though they may be, however, their

numbers are growing - by around 6% between 2015 and 2017, while the number of larger enterprises dropped by 1% in the same period (ISTAT, 2018). For the most part, Italian SMEs work in traditional manufacturing sectors (the textile, clothing, footwear and furniture industries).

Taking into consideration the so-called "non-financial business economy" which excludes agriculture, forestry, fisheries, education and health, the business segments that dominate the SMEs overall sector in terms of number of SMEs, are services (44,9 %, including transportation, accommodation and food services, information and communication, real estate and technical and administrative services), trade (30,5 %), construction (13,5 %) and manufacturing (10,6 %).

Table 5 Number of SMEs by sector, in Italy and in the EU28 as a whole (DIW ECON GmbH, 2018).

Number of SMEs by sectors, 2017 estimates				
	Italy		EU28	
	No	%	No	%
Non-financial business economy	**3 746 109**	**100,0%**	**24 483 495**	
Mining & quarrying	2 160	0,1%	19 423	0,1%
Manufacturing	397 382	10,6%	2 144 237	8,8%
Electricity, gas	10 676	0,3%	106 869	0,4%
Water supply, sewerage, waste management	9 259	0,2%	79 221	0,3%
Construction	505 556	13,5%	3 511 210	14,3%
Distributive trades	1 140 941	30,5%	6 439 747	26,3%
Transportation & storage	127 646	3,4%	1 253 219	5,1%
Accommodation & food services	318 244	8,5%	2 030 535	8,3%
Information & communication	99 608	2,7%	1 215 104	5,0%
Real estate	246 183	6,6%	1 370 485	5,6%
Professional, scientific & technical activities	745 352	19,9%	4 695 465	19,2%
Administrative & support services	143 102	3,8%	1 617 980	6,6%

4.2.2 Important stakeholders

Important stakeholders involved in energy efficiency in SME:s in Italy includes;

- Energy Service Companies - ESCOs
- Other actors eligible/acknowledged to conduct energy audits
    - Certified “Experts in Energy Management” (EGE)
    - Energy Auditors
    - Italian Institute for Environmental Protection and Research - ISPRA (for SMEs having the EMAS certification)
- Suppliers of technologies
- Engineers, technicians and maintainers
- Actors delivering economic and fiscal concessions and incentives, such as Regions, National Ministries, etc.
    - Companies offering Performance Contracting
- National Research bodies operating in energy and environment sectors which support sustainable development. ENEA is one of these bodies. ENEA is a public body aimed at research, technological innovation, and the provision of advanced services to enterprises, public administration, and citizens in the sectors of energy, the environment and sustainable economic development. Its focus sectors are energy technologies (renewable sources, energy storage, smart grids), for which the Agency is also the coordinator of the Energy National Technology Cluster, nuclear fusion and nuclear safety (the Agency is the reference national research coordinator), energy efficiency (with the National Agency for Energy Efficiency), technologies for cultural heritage, seismic protection, food safety, pollution, life sciences, strategic raw materials, climate change. Among the emerging issues, is circular economy, which sees ENEA designated as the National Agency for the efficient use of resources and sustainable mobility.

Other organizations, which are not usually part of the energy efficiency value chain in Italy, but which have this role in the framework of the project GEAR@SME are CNA and Confindustria:

- CNA - the National Confederation of Crafts and Small and Medium Enterprises, at national level, has over 700,000 associates who employ over 1.2 million people. CNA represents artisans, traders, professionals, self-employed workers, micro and small businesses of tourism, services and industry. The widespread presence of crafts, both in large cities and small towns, is matched by the widespread presence of the CNA: over 8,500 employees in over 1,100 locations, of which 19 are regional and 96 are territorial. CNA works to give value to craftsmanship and small and medium-sized enterprises, presenting itself as their partner for development and promoting economic and social progress. This objective is pursued through a structured and widespread organization, a system of companies that offers integrated services and personalized advice to companies, a modern structure that provides its members with assistance,

information and innovative solutions. CNA represents, promotes and protects the companies that operate in all sectors: energy, installers, building and construction chain, transport and logistic, production, mechanical, ICT and communication, food, art, wellness, heath, commerce, tourism, fashion.

- Confindustria Emilia is the association of companies born from the process of integration between Unindustria Bologna, Unindustria Ferrara and Confindustria Modena. A single association capable of guaranteeing a greater representation to an area that is a candidate to be the first Italian manufacturing centre. The articles of association was signed on 3rd May 2017; it protects small, medium and large enterprises of the Emilia-Romagna region, providing the excellence and quality of services and corporate culture by responding to the needs of the global market in a perspective that looks at the competitive scenarios of the future.

4.2.3 Other relevant information

The Italian SMEs work in traditional manufacturing sectors (the textile, clothing, footwear and furniture industries) are grouped in geographically defined industrial districts.

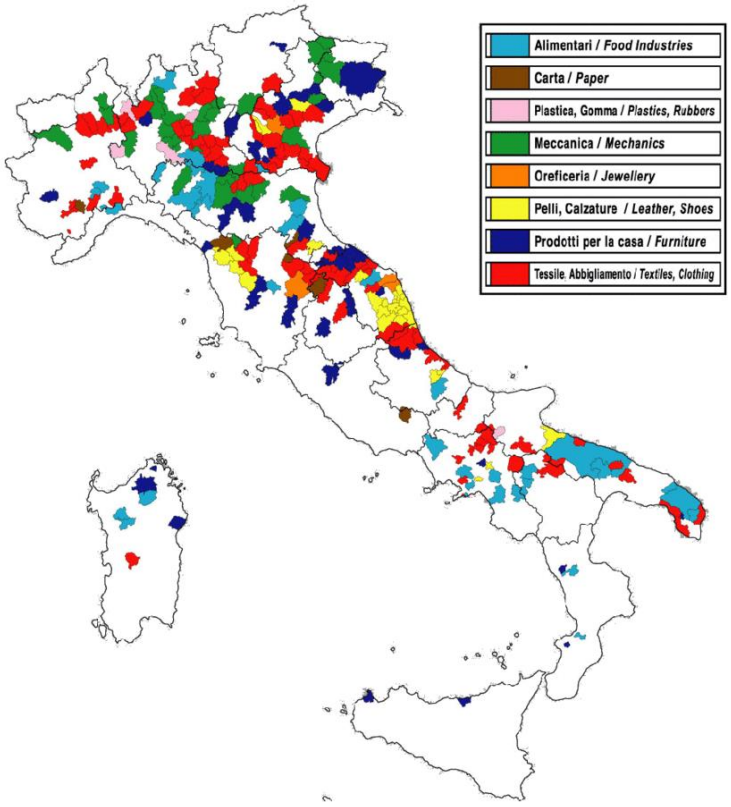


Figure 4 Map of main Italian industrial districts

There are 156 districts with 215.000 manufacturing enterprises having the following characteristics: high concentration of SMEs in a specific area, high specialisation in a productive sector, cooperation among enterprises, and their integration with the local place of reference, its tradition and culture (a district is a spontaneous aggregation of enterprises). A factor of success is the cooperation with public bodies. Also in order to improve competitiveness and energy efficiency an important effort to be made is developing cooperation among district enterprises to create networks of enterprises.

There are two main obstacles to increasing energy efficiency within SMEs in Italy: information and training. Companies in Italy do not correctly know where to find data on the nature and costs of new technologies and are not aware of their own consumption. Furthermore, there is no adequate specific training addressed to SMEs both for the diagnosis of own consumption and for existing interventions aimed at energy improvement.

The ESCOs market in Italy has not yet taken off partly due to the delay in the implementation of the indications on energy efficiency and partly due to the Italian industrial situation, composed mainly of SMEs with limited financial resources to dedicate to energy rationalization interventions, and with little knowledge of the possibilities deriving from the particular forms of financing of Performance Contracts. ESCOs who have focused their offer on a particular service, have been more successful and the most profitable sector at the moment is that of lighting where there is a significant demand for services and it is possible to obtain from 20% to 80% energy saving.

4.3 Netherlands

SMEs can be found in all sectors in the Netherlands, and according to Dutch committee for entrepreneurship (Nederlands Comité voor Ondernemerschap, 2019) they are the driving force of the economy.

4.3.1 Size of the SME sector and dominating industry segments

Almost 95% of all registered companies in Netherlands (1.9 million) is listed as SME, of which almost a million single-person freelance companies (so called ZZP) and almost half a million part-time companies. In 2019, the SME sector contributed to 71% of employment and 62% of value added.

Top SME sectors include professional services, building and construction sector, retail, and healthcare. There are relatively few SMEs in sectors financial institutions and utility sectors, although the latter one is growing. The Dutch chambers of commerce yearly business data report (KVK, 2019) show that from 2017 to 2018 there was an increase of 9% and from 2018 to 2019 there was an increase of 12% in the number of SMEs in the utility sector.

In 2017, the Netherlands had 4.138 locations for entrepreneurships, of which 86% (over 3.500) are business parks (the remainder are for example sea ports, air ports, and shopping malls) (RVO, 2019). Business parc cover 80.000 hectares (see Figure 1), which is 2% of the Netherlands land area. 60% of the Dutch labor force works on a business park. On business parks 700PJ energy is consumed, this is 25% of the energy usage of the Netherlands.

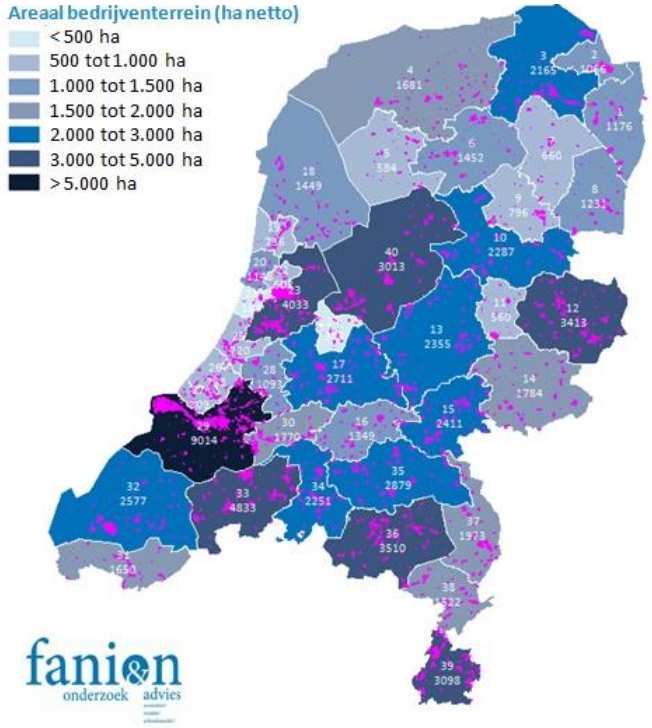


Figure 5 Land use of business parks per COROP area

4.3.2 Important stakeholders

In this section, we will list important stakeholders on national level and we have included references to information sources as well. While supporting policies and finance instruments are described in Chapter 8, and "providing information" could be seen as a policy instrument, we decided to include the main initiatives on information provision to SMEs on the topic of energy saving here.

On national policy level, the ministries of Economic Affairs (EZK) and national affairs (BZK) are the most important stakeholders to SMEs. The Dutch enterprise agency (RVO) is part of the ministry of EZK and supports the execution of, amongst others, the industrial CO_2 reduction policies, the energy efficiency policies, and the renewable energy policies for companies. RVO keeps an overview of both legislation as well as support initiatives for so called sustainable entrepreneurship. Under the topic "sustainable business parks", the Dutch enterprise agency (RVO) has listed initiatives with a collective approach, targeting entities who could serve as trusted partners, such as business associations, development companies, park managers (a common role in

Dutch business parks), and municipal officials (RVO, 2020a). Information sources on the web page include roadmaps, tools, guides, examples from practice, subsidies and regulatory requirements.

MKB Nederland is the Dutch association for SMEs. There are several sector associations such as VNO-NCW (association/lobby representing all Dutch entrepreneurs), FME (Dutch technical industry), Bouwend Nederland (Building and infrastructure industry) and Techniek Nederland (Technical service suppliers, installers, and retailers). MKB Nederland has launched two portals with information on energy savings for entrepreneurs: www.wattjemoetweten.nl and www.deb.nl (MKB Nederland, 2020) Together with 56 partners from regional and branch organizations, who are in close contact with SMEs, MKB Nederland and VNO-NCW have launched the website http://www.wattjemoetweten.nl with the aim of informing companies about the Informatieplicht Energiebesparing (see Chapter 8) and to offer them support if needed. The website www.deb.nl is a cooperation between MKB Nederland and IVBB, which stands for "institute for associations, branches and professions". IVBB is a networking organization, the aforementioned branch organization Bouwend Nederland is on its board of Directors. Deb.nl lists measures that are applicable to their company from the general lists of "Erkende Maatregelen" (see Chapter 8).

The Dutch Chamber of Commerce (KVK) also hosts web pages with information on sustainable entrepreneurship. Together with RVO, CBS (Central Bureau for Statistics), the Dutch tax authority and several other national government entities, KVK also hosts the website Ondernemersplein (http://ondernemersplein.kvk.nl), which aims to be a one-stop shop for SMEs with policy- and regulation related questions about a variety of topics relevant for starting and running a business. Sustainable entepreneurship is one of these topics.

4.4 Romania

4.4.1 Size of the SME sector and dominating industry segments

According to the 2019 Small Business Act for Europe (SBA) fact sheet for Romania, there are 485,757 SMEs in the country, representing 99,7% from the total enterprises. Therefore, SMEs have an important role in Romania's overall industry and economy. The dominating SME business segments in Romania are services and commercial.
Poor information can be found related to the SMEs with relevant energy use out of this total number above. Recently, the energy efficiency official legal attributes moved from the Romanian National Authority for Energy Regulation (www.anre.ro) to the Ministry of Economy, Energy and Business Environment to a new Energy Efficiency Direction in the Ministry. With this occasion, according to the latest energy efficiency reporting by law of all companies with annual energy use over 1000 toe/yr, around 200 could be SMEs, a data for which we are currently expecting official clarifications.

Further, the new Energy Efficiency Direction in the Ministry of Energy has the legal attribute to ensure financing for energy efficiency projects, through a launched Energy Efficiency Fund and has released a first programme for the SMEs and HoReCA sector called ElectricUP. This programme is dedicated to the installation of PV panels and EV chargers on the SMEs and HoReCa facilities and after the first call for projects, we shall have the excellent occasion to access a relevant data-base with SMEs interested on energy efficiency and with relevant energy use (EC, 2019).

There are, in total, 94 industrial parks in Romania, divided between 42 different regions (Gov.ro, 2019). In the Romanian industrial parks, there is a large number of SMEs and through the GEAR@SME project we have launched an active dialog with the association of the industrial parks, called APITSIAR, in order to identify lists of these companies.

4.4.2 Important stakeholders

The main stakeholders involved in energy efficiency in SMEs are Energy Auditors and Energy Managers, banks and Government supporting with energy efficiency programs (see Table 6, on next page).

Table 6 Key stakeholders for energy efficiency activities directed towards SMEs in Romania.

State	ANRE - Romanian Energy Regulatory Authority	Ministry of Economy, Energy, and Business Environment	Technical Universities in Romania (the Technical University of Cluj - Napoca, Polytechnic University of Bucharest, Politehnica University of Timisoara, Technical University of Iasi)		
Private sector	ESCOROM - represents Romanian energy service companies	SMEs Romanian Patronal Association	Romanian Industrial Parks Association	The Association of Romanian Building Energy Auditors	Banks: BCR - Romanian Commercial Bank BRD - Groupe Société Générale Banca Transilvania UniCredit Bank EximBank
Civil society	SAMER - the Association of auditors and energy managers in Romania	CNR-CME - The Romanian National Committee of the World Energy Council	AEE - Association of Energy Engineers		

In addition, the industrial parks association (APITSIAR) has as objectives to promote the sustainable development of industrial, technological, scientific and business incubators, attracting domestic and foreign investments, by providing specialized assistance to its members and potential investors (*Parcuri Industriale La Standarde Mondiale*, n.d.).

4.5 Sweden

Large SME sectors in Sweden are industry, construction, and the commercial and service sectors. There are many different stakeholders supporting energy efficiency improvements in SMEs.

4.5.1 Size of the SME sector and dominating industry segments

The Swedish industrial sector (excluding the refinery sector) use in total about 142 TWh energy (2016) and is energy-wise dominated by energy intensive sectors, such as pulp and paper, chemical, and steel industry. The energy intensive industry uses about 75% of the energy consumed in the industrial sector (Thollander et al., 2013). Of a total of 59 000 industry companies, around 600 companies are in energy intensive industry. About 98-99 % of the 59 000 industry companies can be classified as SME and these consume roughly 10 % of total industrial energy use. Other large SME sectors include the construction sector and the commercial and service sectors. The commercial and service sectors consume, in total, considerably less energy than the industrial sector, but the relation between the energy consumption by large companies and SMEs is about the same (80/20). (Energimyndigheten, 2019; Statistiska centralbyrån, 2020; Thollander, 2019)

The company statistics in Sweden are not adapted to the EU definition of SMEs, even if the same definition is widely used in Swedish policies, regulation and various industry related initiative. Therefore, there is now statistics directly showing the number or distribution of SMEs. There are statistics available based on the number of employees, within different ranges, but the ranges available give a division below and above 200 employees, rather than 250.

Below 200 employees there are in total about 1.24 million companies. However, of these almost 900 000 have zero employees. Of the remaining about 350 000 companies, about 73% have 1-4 employees (see also Table 7, on next page). The sectors most relevant for the type of collectives discussed within the GEAR project (blue in Table 7), are the ones for which companies are more likely to be situated in local business parks or similar and for which most of their operations take place in the on-site buildings in these industrial areas.

Table 7 The division between sectors for companies with 1-199 employees in Sweden (Statistiska centralbyrån, 2020). The most relevant sectors for the type of collectives discussed within the GEAR project have been marked in blue.

Sector	All companies 1-199 employees		Companies 5-199 employees	
	Number	Percentage	Number	Percentage
Agriculture, forestry and fishery	11,155	3,2	1,988	0,6
Minerals and mines	260	0,1	101	0
Food, drinks and tobacco industry	2,118	0,6	1,079	0
Textile industry	785	0,2	221	0,1
Wood products, graphic industry	2,860	0,8	1,199	0,3
Chemicals, Pharmaceuticals and plastics	1,776	0,5	963	0,3
Metallic products	5,175	1,5	2,675	0,8
Electronics and computers	2,779	0,8	1,491	0,4
Transport and vehicle products	792	0,2	371	0,1
Furniture	836	0,2	369	0,1
Other manufacturing	1,059	0,3	303	0,1
Repairment and installations	3,365	0.9	777	0,2
Public utilities	1,230	0,4	617	0,2
Construction-related	48,796	14.2	13,753	4
Retail	50,884	14.8	16,436	4.8
Transportation companies	16,080	4.7	5,169	1.5
Hotels and restaurants	20,627	6.0	8,227	2.4
Media companies	6,024	1.7	1,302	0.4
Consultants etc in service sectors	103,136	29.9	14,635	4.2
Other service companies	25,897	7.5	6,661	2.0
Schools and health care	21,635	6.3	6,680	1.9
Cultural and sports org	17,557	5.1	4,260	1.2

4.5.2 Important stakeholders

In addition to the more specific, project-oriented, initiatives described below, the following important actors play major roles in supporting energy efficiency improvements in SMEs:

- The Swedish Energy Agency (SEA) is the main regulatory body in relation to energy efficiency in SME:s. They provide information material, support programs, financing of EE projects and it is through them SME:s apply for various grants provided. The SEA has a major role in all the initiatives below and also funds and makes available many of the tools and instruments included in the overview for Sweden. Consequently, SEA plays, in addition to its authority role, also the role of an important multiplier organization.
- County administrative boards (Länsstyrelser) are responsible for environmental supervision, in which requirements on energy management are included. Their role in relation to energy efficiency work is further described in connection with initiative Incentives for energy efficiency, below. The national body for these authorities is the Swedish Environmental Protection Agency.
- On the regional level there are regional climate and energy offices, providing support and energy efficiency advise to both SME:s and private households. These are in general project financed, mainly through the SEA. In particular, personnel at these energy offices have in most cases also been coordinators within the EENet initiative. The, in total, 15 regional energy offices covers all of Sweden and are linked together by collaborative organization (energy offices Sweden).
- On the local level there are municipal energy and climate advisors. The municipal advisors (linked to one specific municipality or to a group of smaller municipalities) are financed by the SEA, based on the size of the municipality. The municipal advisors target their information activities towards households, SMEs and organisations. The municipal advisors also collaborate with the regional offices.
- About 80 Swedish Energy service companies are organized through the organization Energy Efficiency Companies (EEF).
- There are of course a number of industry associations. These are mostly organized after sector, rather than company size. Therefore, it is not altogether easy to identify those most relevant for the targeted SMEs. However, a few examples of relevant organisations include Företagarna, Teknikföretagen, and the network of regional Chambers of commerce.

5 Current energy efficiency support initiatives in partner countries

This chapter gives a description of the most important examples of energy efficiency support initiatives for SMEs – including basic facts about scope and orientation, and more details about the set-up and the role of involved actors from the GEAR@SME-perspective (organize, activate, enable, embed). Possible successful outcome of the initiatives as well as shortcomings are included and, if possible, explained. The questionnaires on which the contents of this chapter is based can be found in Appendices A and B.

5.1 Germany

For Germany, three different initiatives are described. The first two represent the main national initiatives directed for support of energy audit and energy efficiency improvements in SME. The third initiative describes the energy efficiency network initiative, which, because of its collaborative approach is especially relevant for the GEAR@SME project. It should be noted that the first example, "Mittelstandsinitiative Energiewende und Klima" is also an informal partner in the GEAR@SME project.

5.1.1 German SME Initiative for Energy transition and Climate Protection - Mittelstandsinitative Energiewende und Klima

Overview, scope and activities

The Federal Ministry of Economics and Technology and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Association of Chambers of Commerce and Industry (DIHK) and the German Confederation of Skilled Crafts (ZDH) founded this initiative in 2012. All companies in Germany have to be member either in the German Association of Chambers of Commerce and Industry or in the German Confederation of Skilled Crafts, so this initiative addresses all SMEs in the country. With these two organisations being member and driver of the initiative, the two biggest multiplier organisations towards SMEs are involved in the initiative. (Mittelstandsinitiative, 2020)

Starting point for this initiative is that the restructuring how we produce and use our energy is the largest infrastructure project of our time, and therefore presents enormous challenges, but also opens many opportunities for SMEs. The renewable energy sector in Germany is essential for the substantial improvement in energy efficiency which is key to the success of the energy transition on the one hand, and to the competitiveness of business on the other hand.

The energy transition offers medium-sized companies the opportunity to sustainably reduce their energy costs and opens up business opportunities. Thus, the initiative aims for the following:

- Saving in energy costs and a strengthening of the leading position of German companies in the field of environment and energy technologies.
- The development of a growing market for energy services with demanding quality and qualification requirements.
- Opening up new markets and business opportunities for energy efficiency technologies and services and hence to further value creation.
- For the purpose of providing SMEs with external advice and expertise, the initiative develops its activities in the following areas:
    - Intensifying the dialogue about the challenges of the energy transition between politicians and medium-sized companies in industry, trade and crafts. This includes an exchange of views on the development of renewable energy, efficiency and network expansion and modernization. Furthermore, information channels from regional business to politics and dialogues between different stakeholders of the economy are to be expanded.
    - Optimizing consultation to carry out economic efficiency measures. This is to be realized by establishing regional working groups to implement sample solutions for specific industries as well as conducting information campaigns on potential savings in small and medium enterprises. Furthermore, developing inter-company vocational training facilities focussing on cross-trade energy efficiency solutions in the building sector, in power engineering, environmental protection and sustainability.
    - Improving training and exchange of experience to give SMEs the opportunity to raise their own energy efficiency potential. This includes, without being limited to, further development of career chances in the field of renewable energy and energy efficiency.
- But the initiative also offers support to individual SMEs and their employees. This include:
    - So-called “EMAS-convoys”, which are networks of SMEs that join their efforts to obtain an EMAS-certification (Eco-Management and Audit Scheme).
    - Specialised vocational training with a focus on energy efficiency.
    - A Training Programme For Employees that will qualify them to become Corporate Mobility Manager.
    - Consultation, webinars and information on climate protection related issue (e.g. CO_2 footprint, energy efficiency) and how SMEs can improve their performance.

Aspects especially relevant from the GEAR@SME perspective

As described above, the initiative offers a wide range of services to SMEs. Most of these services are aimed at the SMEs individually, but a few (such as the EMAS-convoy) also form networks of SMEs. The initiative has a central office in Berlin, but will make use of regional Chambers of Commerce and Chambers of Crafts. It can therefore be said that these, as they will be in contact with the SMEs regardless of this initiative, have the role of the "Trusted Partner."

The offers to the SMEs involve a number of multiple benefits. Besides showing ways to reduce energy costs, there are offers that improve career opportunities for employees, offer networking opportunities and give the SMEs the possibility to show their engagement against climate change, both to potential clients and to their own employees. Some of the offers are for free, so it can be considered a financial incentive to make use of them, but there is no obligation for the SMEs involved.

How the SMEs are informed, addressed and involved will very much depend on the initiative of the regional Chambers of Commerce and Chambers of Crafts. In Berlin, the local Chamber of Commerce is very active in this field, having formed an energy efficiency network, running vocational training for energy-scouts and promoting initiatives on energy efficiency. On the contrary, the Chamber of Crafts in Berlin has much less visible activities, so no general statement can be made how the SMEs are involved and to what extend the local activities take up needs, motivation and expectations of the SME.

Successful outcome and shortcomings

There are no figures available to evaluate the success of the activities. The wide range of activities and offers are likely to address the needs of a large number of SMEs. But with no obligations for the SMEs, it is up to the SMEs to decide if they want to make use of these opportunities or not. It will also depend on the local chapters of the Chambers of Commerce and Chambers of Crafts to communicate these activities to the SMEs, and to convince them that it is in their interest to address the issues of energy efficiency and climate changes. These two factors - the local Chambers and a lack of interest or capacities on the side of the SMEs - will most likely be the factors challenging the initiative success of the "Mittelstandsiniative Energiewende und Klimawandel".

5.1.2 Energy Consulting for Medium-sized Businesses (BAFA) - Bundesförderung für Energieberatung im Mittelstand

Overview, scope and activities

Under this programme "Energy Consulting for Medium-sized Businesses", the Federal Office for Economic Affairs and Export Control provides funds to support SMEs in making use of qualified energy advice. This is an important and well-established

instrument for reducing information deficits, identifying potential savings and pointing out measures to improve energy efficiency.

For the purpose of reducing energy costs sustainably, SMEs can apply for funds to take advantage of energy consulting. This is realized by an external energy auditor who is commissioned and approved by BAFA. These licensed energy advisors can be found on the "energy efficiency-expert list" of the German Energy-Agency (DENA). Eligible to apply are small and medium-sized enterprises as well as members of liberal professions in Germany. The funds are limited to companies which have 250 or fewer employees as well as an annual revenue of 50 million euros or less, thus the programmed is aimed at SMEs. The funding takes the form of a non-repayable grant. The amount granted depends on the energy expenses of the respective enterprises. For companies with a yearly cost of energy over 10.000 euro, the funds cover 80% of the eligible consulting cost, however not more than 6.000 euro. On the other hand, companies which do not spend more than 10.000 euro per year on energy will be granted 80 % of the eligible consulting cost as well, however not more than 1.200 euro. (BAFA, 2020)

Energy Audits aim to help SMEs in a multitude of ways including but not limited to:

- Preventing companies from unnecessary wastage of energy costs.
- Pointing out individual measures which make sense economically and still fit the budget of the funds granted.
- Qualified energy auditors carefully examine enterprises to advice on the energy management system as well as carrying out "contracting checks", to determine whether it would be useful to implement a specialized service provider.

Aspects especially relevant from the GEAR@SME perspective

There is no intermediary partner formally involved and the BAFA is acting at a federal level without specific regional activities. Nevertheless, in practice this programme is often recommended to SMEs by multiplier organisations who are active locally and are already in contact with SMEs, such as IHK, energy agencies or energy consultants (so in some cases they could also be considered to be "Trusted Partner"). The consultation itself is provided by energy consultants.

As the energy consulting takes place individually for every SME, they are not organised amongst themselves. So even if they are in geographical proximity, they will not know of each other. They are also not organised in a network, although the energy consulting may result in a deepened interest in the issue and lead e.g. in joining energy efficiency networks.

There is no legal requirement for SMEs to implement energy consultations. The incentive is to reduce energy costs, although the motivation for SMEs to make use of this programme will differ. It can be assumed that for most SMEs the motivation

is primarily to reduce energy costs, although some will also see benefits from reducing emissions in their relations towards the public, their clients and their employees.

The energy consulting often serves as an entry point for SMEs into the issue of energy efficiency. It gives SMEs an overview of the energetic situation in their company and of possible measures they can take to reduce energy consumption. While most SMEs will deal with this issue individually, some SMEs are likely to take a deeper interest in the issue and get involved in energy efficiency networks.

Successful outcome and shortcomings

In 2019, 3.643 SMEs made use of this programme, which is an increase compared from the years before (around 2.500 in 2017 and 2018), but still only a very small part of the SMEs. Looking at the sectors, the three top-runners were the manufacturing sector, hotel and gastronomy and trade. Considering the total number of SMEs in Germany, the programme only reaches very few SMEs. As the administrative procedures involved are not too complicated, the programme is either not known to the SMEs, or (more likely) the topic of energy efficiency is just not a priority for SMEs.

For the past few years, there is no evaluation available on what the SMEs did with the results of the consultation, but from evaluations from before 2015 (then still run by the KfW - Kreditanstalt für Wiederaufbau, with slightly different structures), it is known that these consultations often lead to measures, and thus to a reduction of energy consumption.

5.1.3 Initiative of Energy Efficiency Networks - Initiative Energieeffizienz-Netzwerke

Overview, scope and activities

The federal government and the business associations and organizations involved in this initiative agreed that further increase of energy efficiency is crucial for the international competitiveness of the German economy, the development of new business models as well as climate protection. Thus, energy efficiency can be advanced effectively if enterprises take said task into their own hands. Therefore, an agreement was signed in 2014 to introduce the energy efficiency networks.

The aim of this agreement is to support the initiation and implementation of around 500 new energy efficiency networks. This initiative builds on the success of energy efficiency networks that had been established before 2014 and showed that this can be a successful approach to saving energy. Companies enter into a targeted exchange with experts to share experiences and ideas to receive practical measures to advance their operations. This leads to a more efficient use of energy and thus to a potentially noticeable reduction in energy costs. (Energieeffiizienz-Netzwerke, 2020)

The participation in the energy efficiency network enables companies to plan and efficiently implement economic investments in energy efficiency. This is realized by the following points:

- Preserve a solid database for investments in energy efficiency.
- Create energy transparency in the enterprises to ease the task of meeting mandatory energy audits requirements.
- Use funding programs, supported by energy advisors and network providers.
- Expand energy know-how.
- Increase energy efficiency and reduce costs and thus achieving competitive advantages.
- Benefit from the networking with politics, business and other local enterprises.

Example of a network:

In April 2016, the REGINEE (Regional Network for Energy Efficiency) in Bonn/ Rhein-Sieg was founded as a cooperation between the association of energy customers (VEA) and the IHK Bonn/ Rhein-Sieg. Eleven companies along Grafschafter (a sugar syrup producer), a printing company, an iron foundry and companies from electrical and mechanical engineering industries, joined forces with the aim of increasing their own energy efficiency. The originally planned network goal was achieved, but above all, the exchange of experiences in the cross-sector network led to a high level of satisfaction among the participants.

The REGINEE Bonn / Rhein-Sieg implemented a total of 73 energy efficiency measures. This will generate annual final energy savings of 6,400 megawatt hours and an annual reduction in CO_2 emissions of almost 3,300 tons.

Aspects especially relevant from the GEAR@SME perspective

Any kind of company can participate in the energy efficiency networks, so they are not limited to SMEs. Normally, they will be organised locally, so the participants will be in geographical proximity. Companies tend to prefer that no direct competitor is in the same network, as they do not want to share any information that could be useful for competitors.

The networks normally are organised and run by external experts, and external experts will also provide their expertise. The networks will in most cases be initiated by local actors who are already in contact with the companies (e.g. Chambers of Commerce, Public business promotion agencies) and will then bring a group of participants together. When bringing them together, they will have to be in close contact with the potential participant, and take up what the participant expects from its participation in the network. They will thus learn about previous experiences with energy efficiency and the motivation of the company to join the energy efficiency network. Referring to the GEAR@SME approach, they initiate the networks and thus often act as trusted partner. As the networks are organised locally and the guidelines for these networks

are not very strict, the networks can be quite different. Also, the activation takes place locally, and will be different from region to region, but it is very likely that the networks will adapt in their functioning to the expectations of its members and the already existing expertise amongst its members on energy efficiency.

The participants clearly understand themselves as a group that will go together through a process that often lasts over two years. Networks can be supported locally, but in most cases the participants will have to pay to be part of the network. It will depend on the approach of the individual network if multiple benefits come into play, but the approach favours multiple benefits, such as networking with the other members of the network or contributing to climate protection.

Organisations that have participated in energy efficiency networks normally will have a thorough understanding of the issue and what it means for their organisation. They will have gained the expertise to pursue energy efficiency after the end of the network, and it is quite likely that it has been integrated into the functioning of the organisation. Energy efficiency will thus have become an integral part of the daily doing and the decision making process within the company. But the guidelines leave some flexibility on how the energy efficiency networks are organised, and this can impact the savings achieved and to which extend the SMEs integrate energy efficiency in their functioning.

Successful outcome and shortcomings

The initiative still has a long way to go to reach its objective of 500 energy efficiency networks. As of December 31st, 2019, 252 energy efficiency networks had been founded. The initiative has installed a monitoring system in order to monitor the energy savings achieved by the networks. Based on the monitoring of 87 networks, in each network 40,6 energy efficiency measures were implemented, with 88% of them being categorised as “simple measures”. This averages 3,7 measures per participating enterprise. This monitoring also found, that 45% of the participating enterprises were SMEs, so SMEs are underrepresented in these energy efficiency networks. This can at least partially be explained by the fact that the participation in energy efficiency networks require a considerable investment in time and money from the participating enterprises, and this will only pay off of the energy consumption is rather high. The monitoring also showed that most of the participating companies were “very satisfied” with the results of their energy efficiency network.

5.2 Italy

The Italian partners to the project have chosen to describe one example – the Roveri industrial district – in detail. This is because this example provides important experience and inspiration for the development and roll-out of a use case in Italy, but also since there are few examples of initiatives with a collective approach in Italy. The motivation for this choice is mainly due to the initiatives already in place in the area aimed at

building a community and a strong network of enterprises and local stakeholders (For an overview of more general policies and regulation, see Section 8.2). The information in this section is provided by ENEA.

5.2.1 The “Roveri” industrial district as a success story in Bologna

Overview and scope

The story and key facts

The Roveri industrial area is a big area (1,998,000 m^2) located on the borders of Bologna city centre. It was developed according to a systematic plan (while many other industrial areas in the region developed based on different enlargement over time, not specifically expected at the first planning phase). This feature implies that the area has effective access ways and internal roads, green areas, and composition of private and common spaces).

The composition of enterprises existing and operating in the area has changed over time. It was exclusively industrial nature at the beginning. Nowadays, the set of enterprises settled in the area is composed of industrial activities, craft activities, services but also commercial, leisure and sports activities. In recent years, many enterprises left the area or closed, and the area used to have many empty buildings or not in use. Then, a new incoming of enterprises took place supported by local associations. Specifically, many companies already settled enlarged their existing production site, or companies already operating in other areas decided to move to the Roveri area. Currently the number of buildings not in use is very low and there is a demand from new companies to settle in.

The Roveri area represents a typical local industrial area built in the seventies near the urban areas and now embedded in the city. This kind of areas are called “transition areas”, and they are potentially involved in renovation, requalification, development, or regeneration processes in order to increase the functionality and the attractiveness.
The Roveri area is one of the first examples of an industrial area built with a master plan; with zones planned for the industrial activities and zones for artisans. The settlement is still efficient despite the great changes that occurred over time.

Figure 6 The Roveri industrial district: aerial view of the settlement.

The needs for renovation of the area: "Roveri Smart Village"

The Roveri industrial area has been facing many changes in the last fifty years. It is important to identify the main needs of the area. The integration between industrial and urban areas is an important issue; the Roveri industrial area was planned with a general idea of efficiency for manufactural and handicrafts activities, but over time, different activities replaced the original ones without an organized plan.

In the last years, Roveri has been becoming completely incorporated in the city with perfect continuity with the adjacent residential and commercial neighbourhoods. Therefore, Roveri provides a significant case where to experiment with both industrial and citizens' involvement towards the creation of a Smart Sustainable District: "Roveri Smart Village".

Roveri Smart Village is an initiative promoted by ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development - since 2017 at the Roveri industrial district and in which the Agency collaborates by promoting the activities of the Municipality of Bologna.

In the Roveri industrial district a transition process has been started through a systemic and integrated approach towards the creation of Roveri Smart Village, which represents a big challenge to achieve. The aim is both to steer the innovation towards a Sustainable Smart District and to build a community and a strong network of enterprises and local stakeholders.

Roveri Smart Village is not a single project but a combination of different research projects and activities provided by research agency and academia (ENEA, UNIBO University of Bologna), trade associations (i.e., CNA, Confindustria Emilia) and local institution (Bologna Municipality, Metropolitan city of Bologna). ENEA was involved in energy issues and UNIBO in circular economy issues.

Thanks to this scientific and institutional support, Roveri could therefore be considered a laboratory for experimenting with innovative activities and competences in the fields of circular economy, energy efficiency, and smart city. The adoption of a collaborative and integrated approach has provided valid support for the implementation of smart and sustainable district, with the involvement of the whole industrial, institutional and citizens stakeholder community. Moreover, the combination of different projects within the industrial area has allowed to accelerate a dynamic transition process, in order to tackle numerous challenges related to environmental, social and economic aspects.

Innovative approach for the energy efficiency of SMEs in the Roveri area

A consortium was recently created (by Bologna Municipality and Metropolitan city of Bologna, ENEA, Emilia-Romagna Region and industrial associations and other actors) with the aim to create a new management model for a sustainable transition of the existing industrial park. The energy efficiency initiative, involving SMEs of the Roveri area (Italian pilot of European "BEST Energy CheckUp" project), is part of this wider "Roveri Smart Village" initiative.

In this industrial area there are mainly SMEs. Currently, Roveri Industrial District holds nearly 400 companies arranged in about 200 settlements and it represents one of the urban areas with the highest concentration of small and medium-sized enterprises inside an Italian Metropolitan area.

Table 8 Key data for the Roveri industrial area.

Urban centre (population, inhabitants)	390,000
Area (m^2)	1,998,000
Number of production settlements (number of companies)	About 200 (400)
Position	On the outskirts of the city
Type of enterprises	Industrial/crafts (SMEs), services, shopping centres, sports, and recreational activities

ENEA was, as the Italian partner in the European BEST Energy CheckUp project, previously involved as promoter of an innovative initiative of synergy between research and industries to drive the sustainable changing of a large mixed industrial district, that is in transition (in brands and activity nature). ENEA implements both the individual Energy CheckUp and the collective approach (about 100 individual check-ups) in Roveri SMEs.

The consortium partners experience was a further contribution to the BEST project mainly for the adaptation of the model to the Italian case. Moreover, some more individual SME Energy CheckUp (at least 50) are carried out within the Emilia-Romagna Region thanks to the involvement of Business Associations acting in cooperation with project partners. This initiative is working as an interface between industrial and public stakeholders, thus making it a new (bottom-up) community perception. As such, the initiative helps the Roveri community to reach important goals such as new services (sustainable local mobility, a net for compressed air distribution, etc.) and an innovative vision of the area that goes from individual to community.

Business model adopted for Roveri area

According to the BEST Energy CheckUp methodology, two independent approaches have been developed to involve SMEs in the energy saving initiative: Business parks Energy Positive (BE+) and SME Energy CheckUp. Both approaches are very distinct as BE+ works top-down with organized business parks (park management structure in place) and analyses energy saving potential on a macroscopic level for a business park and its participating companies. SME Energy CheckUp on the other hand works bottom-up as an online platform for all individual SMEs to use, irrespective of specific location, and charts the individual measures for each SME.

An initial process called 'wireframe' model has been developed to reach SMEs located on industrial parks where a local organization is lacking. This model has been adapted to the Italian situation and a business model and business case of the BEST initiative are set-up: in order for the BEST initiative to be sustainable and continuously be able to set-up new organizations on business parks, revenues need to be created which can be reinvested into new projects.

Within the business model adopted for the Roveri industrial district the energy efficiency activities are financed by the Local Authorities (Municipality of Bologna) and Emilia-Romagna Region. Using financing, the industrial district hires an ESCO to do energy efficiency projects. The return on investment in this case comes from the energy savings delivered from these projects over the next few years.

Set-up of the energy efficiency support initiative - Actors

In the transition and development of the Roveri industrial area, the following different types of actors have been involved.

SMEs: micro and small and medium-sized enterprises including manufacture and handicrafts SMEs.

Energy service providers: auditors, energy management experts, ESCOs.

Trusted partners: Bologna Municipality, Metropolitan city of Bologna (Local Authorities), Emilia-Romagna Region.

Bologna Municipality provides support through calls for tenders that pay for improvement actions. The Emilia-Romagna Region provides a big support to BEST Project releasing tenders for energy audits. The Emilia-Romana Region supports SMEs by coordinating tenders that repay 100% of the costs for the energy audits carried out in them.

Multiplier organisations: trade associations (CNA, Confindustria Emilia).

In the role of multiplier organisations throughout the initiative, CNA and Confindustria Emilia (see Section 4.2) have preliminarily investigated the availability and interest of its members in the energy efficiency initiative.

The two organisations organized arenas for putting the various entrepreneurs in contact and stimulated comparisons and discussions that brought out critical issues, common objectives and needs linked to the desire to create a common management of the area. Confindustria has worked closely with ENEA involving its associates and doing a careful job of involving the companies by making them aware of the project objectives and the great advantage that companies could obtain in terms of new knowledge and the possibility of accessing regional and municipal tenders. Confindustria has found the companies that have been subjected to an energy audit within the BEST project.

Other: ENEA, Bologna's Chamber of Commerce.

For the Roveri area, ENEA (see Section 4.2) provides support through targeted analyses of the potentialities of energy development and improvement and creates meetings between the SMEs.

Bologna's Chamber of Commerce carries out important functions in the administrative area (the most important being "the business register"), offers enterprises a full range of services to facilitate market intelligence and skilled training, to stimulate companies and businesses in innovative efforts and to support business trade relations in Italy and abroad. Bologna's Chamber of Commerce participated by providing updated data of the companies interested in the project.

Set-up of the energy efficiency support initiative - Organizing

Organisation of key actors

The SMEs in the Roveri area are not originally organised in an energy efficiency network and therefore there was no evidence that SMEs were cooperating in an energy-efficient way. However, since 2016, ENEA stimulated the local stakeholders (Municipality of Bologna) for an involvement in "Roveri Smart Village" initiative. The first outcome was the "Cabina di regia" resolution, published in December 2017. It is a public-private agreement that includes ENEA, local industrial and craftsman associations, Metropolitan City of Bologna, Emilia-Romagna Region; it involves all partners in a non-profit activity to "help local government to find and test new methods and tools for enhancing the urban industrial area's attractiveness through sustainability and energy efficiency". Thanks to the interaction with BEST project activities, the project evolved with the setting up of special funding for energy efficiency, environmental quality, safety, and security interventions in SMEs settled inside Roveri area.

ENEA has actively involved trade association (CNA), industrial association (Confindustria Emilia) and public bodies (the Municipality of Bologna, the Chamber of Commerce of Bologna) to obtain data on SMEs previously contacted through the support of the same trade associations that have provided the references of SMEs available and interested in the energy efficiency initiative.

ENEA has supported SMEs interested in using the tool to carry out simplified energy check-up, including through onsite energy check-ups. On request of ENEA, Emilia-Romagna Region also provided the data of the Energy Certificates (APE, "Attestato di Prestazione Energetica" in Italian) to ENEA to estimate the potential for exploitation of renewable sources in the area.

The Emilia-Romagna Region provides substantial support to ENEA within the BEST project through a call for tenders to finance energy audits in SMEs. Thanks to the funds made available by the Region for energy audits, SMEs were able to engage auditors, energy management expert and ESCOs to carry out in depth energy audits preparatory to implement energy efficiency measures.

At the end of November 2018) the Municipality of Bologna has undertaken to make relevant funds available (€1.7 million) for a call for tenders aimed at supporting energy efficiency measures for SMEs settled in Roveri area and support ENEA to integrate results of simplified energy audits and Energy Certificates data with the GIS data.

In fact, in the case of Roveri area the functional mapping made it possible to know the exact number of enterprises settled in the area, the dimension of them (size of buildings, number of employees) and their activities. This knowledge, from the

geographical point of view, allows to identify potential critical issues, or on the other hand, opportunities for collaboration between companies.

A GIS-map of SMEs in Roveri can allow not only to know and monitor the industrial activities present, but also to decide more suitable and holistic projects on energy efficiency and green economy (see Appendix E).

Set-up of the energy efficiency support initiative - Activating
The aspects that have been important to activate the SMEs in the Roveri area are primarily related to multiple benefits and financial incentives. No survey on the motivation of SMEs has been conducted.

Multiple benefits
The multiple benefits of the initiative are generally those linked to the effects of energy efficiency: energy savings, emission reduction, energy supply and prices, energy security, industrial production, employment, local pollution, resource management, increased asset value, sustainable local mobility, achieve cost savings by creating shared networks for ancillary services (a project for the compressed air distribution network), etc.

Financial incentives
Financial incentives have been provided to support the development of the Roveri industrial district.

Regional tenders have been published for SMEs (100% funding of energy audits and partial funding of energy efficiency interventions, 30-70%) and there was great participation by SMEs.

At the end of November 2018, the Roveri tender was released by Bologna Municipality administration to offer a relevant budget (€1.7 million) for companies settled in Roveri (with a required co-financing of 50 %). The objectives concern development and sustainability by facilitating investment projects that include:

- Interventions aimed at "environmental sustainability" of business activities
- Energy efficiency, safety measures, reclamation, etc.

Its positive socioeconomic and environmental impact derive from the significant number of companies that will be involved. About 10% of potential interested companies have the necessary requirements: micro enterprises and small enterprises. A towing effect is also expected, because the “Cabina di Regia” joined to BEST project activities, will continue to increase the entrepreneur's community interconnection and communication through sharing events as monthly B2B aperitifs to create opportunity to know each other’s, open events to share best practices, workshop to disseminate results and achieved goals. The idea is also that the current Roveri Smart Village governing board

can support the growth of a new Roveri board constituted directly by the entrepreneurs according to the cooperative approach.

Set-up of the energy efficiency support initiative - Enabling

Activities supporting the ongoing process

The actors of the project were not required to have any special knowledge but the will to act in the field of energy efficiency.

It was necessary to train the various participating actors in the possibility of accessing incentives, tenders and grants made available by the State and Local Authorities. Specific workshops and seminars were organized in which many stakeholders participated.

Another new field for the project actors to explore was “circular economy”. In this case, another project financed by the Climate KIC was associated and a specific training course on Circular Economy was established. The course was free to attend and was held for the most part by an ENEA colleague (Francesca Cappellaro) recognized nationally as an expert in this specific sector.

The was developed till now with a bottom-up approach including different instruments and projects in a common framework. Specifically, the main activities performed till now refer to:

- Stakeholder engagement (a process for involving SMES located in the area through workshops hosted by the different enterprises, facilitating participation and discussion about renovation objectives and measures, drafting of a renovation plan with specific objectives)
- Governance (involvement of local and regional authorities and establishment of a coordinating board composed by the municipality, the metropolitan authority, and the regional government)
- Development of instruments and services for supporting companies (i.e., implementation of training in energy efficiency issues to companies, implementation of energy audits of SMEs)

Set-up of the energy efficiency support initiative - Embedding

The initiative involves SMEs in the Roveri area and Local Authorities such as the Municipality of Bologna, Emilia-Romagna Region, trade association (CNA) and industrial associations (Confindustria Emilia) and important research institutes such as ENEA, working in collaboration with the project partners.

The energy efficiency initiative integrates and is well embedded in the broader vision of Roveri Smart Village, a big challenge to achieve a transition process through a systemic, collaborative and integrated approach to support the Roveri industrial district transformation with the aim both to steer the innovation towards a Sustainable Smart

District and build a community and a strong network of enterprises and local stakeholders. The adoption of a collaborative and integrated approach has provided valid support for the implementation of smart and sustainable district, with the involvement of the whole industrial, institutional and citizens stakeholder community. Moreover, the combination of different projects within the industrial area has allowed to accelerate a dynamic transition process in order to tackle numerous challenges related to environmental, social and economic aspects.

Currently, several projects have seen their implementation within Roveri area with significant achievement steering the transformation towards a Sustainable Smart District: Food Crossing District Project, Climate KIC Pioneers into Practice Programme, BEST Energy Check Up project and Go-SIV.

Successful outcomes and shortcomings

Successful outcome

- Dual approach with large involvement of SMEs: ENEA is applying in Roveri SMEs both individual Energy CheckUp and collective approach (about 100 individual check-ups for as many SMEs)
- The power of the Consortium: some more individual SME Energy CheckUp (at least 50) are done within the Emilia-Romagna Region thanks to the involvement of business associations acting in cooperation with project partners
- Financial incentives via regional call of tenders to support energy efficiency initiative for SMEs (funding energy audits and energy efficiency interventions)
- Potentially high energy savings at both individual and collective level
- Targeted tools and training instruments
- Active stakeholder engagement
- Satisfaction of the SME involved in the initiative, sharing successful experiences
- The energy efficiency initiative is part of the transition towards a sustainable smart district
- Data integration from a variety of tools (Energy audits, Energy Certificates, GIS data) for the purpose of knowing and monitoring industrial activities but also to support decision making in the implementation of more suitable and holistic projects on energy efficiency and green economy
- Real-time monitoring to implement effective and appropriate energy saving measures
- Real-time monitoring as “energy saving measure” itself and provides solid data for ESCOs that give reliable information on the realized energy savings by implemented energy saving measures
- Monitoring to reduce potential financial risks

- Regional monitoring data will be usefully used by various stakeholders: typical stakeholders would be entrepreneurs in the business park, park management, energy suppliers and distribution system operator, regional and national government
- Simple and cost-effective solutions with IoT sensors.

Potential barriers

Some barriers that are an obstacle to the development of the area's potential are:

- Many old buildings with low energy quality
- There is no area management system
- Small companies have little resources and few or no employees that can really help energy efficiency projects
- SMEs are not obliged to undertake energy improvement actions
- The willingness to share data for collective/regional energy efficiency initiative
- Monitoring costs for SMEs
- The crisis of the past years, and the current one for COVID-19, have blocked construction activities.

Monitoring system features

Within the BEST project a regional monitoring system and measuring of KPIs that works on four relevant levels was presented: on a project scale, on a company scale, on a business park scale and on a regional scale, including the surroundings of a business park.

Important KPI categories for regional monitoring (with example KPIs given between parentheses) were expected to be:

- Energy (use, sustainable generation, storage, flexibility/energy patterns, self-sufficiency)
- Costs (investment, financial gains)
- CO_2 (reduction of CO_2 emissions)
- Production (change in production levels for business processes)
- Mutation (change in ownership)
- “Other” (air quality, business activity, level of organization).

In Italy monitoring of the main process demands is obligatory for enterprises of more than 250 employees. For Italian SMEs, the availability of detailed energy data is often much less, but of course there are also SMEs with modern meters and good data availability. For SMEs, a cost-effective metering system was developed by ENEA with the Universities of L’Aquila and Messina.

Monitoring activities for some SMEs of Roveri area

ENEA carried out also a National campaign to stimulate energy efficiency: first target of the campaign is to increase awareness and encourage large enterprises and SMEs to perform energy audits and to use the available incentives to install energy efficient technologies and to install monitoring systems to help enterprises to evaluate in a better way energy consumption.

According to ENEA guideline, each company is divided into functional areas (main uses, general uses, auxiliary uses), therefore, the implementation of the permanent monitoring plan must be defined so as to keep the significant data of the company context under continuous control, and to acquire useful information for the management process and give the right energy weight to the specific product produced.

These rules are not mandatory for SMEs. In order to encourage SMEs to implement energy audits and monitoring, the Italian government has set up a fund to finance these actions. The funds are distributed by the Regions through calls. The Emilia-Romagna Region has accepted the provision and some companies in Roveri Industrial Area have joined the call for tenders.

Within the BEST project ENEA decided to support some companies in the Roveri area to install a monitoring system and to draw up an energy audit, starting two important activities, one of which with the Bastelli company (SME) located in Roveri area. A preliminary energy audit was carried out and an energy model (both thermal and electric use) was created.

For the company Bastelli it was decided to apply a monitoring system developed by ENEA in collaboration with the University of L'Aquila because an SME cannot afford the high costs of a commercial system. The ENEA system is low cost and can be customized according to the needs of the company.

5.2.2 The role of CNA Ravenna as a multiplier organization in Italy

The National Confederation of Craft Territorial Association of Ravenna (CNA Ravenna), represents companies and entrepreneurs throughout the province of Ravenna (in Emilia Romagna), supporting them to develop, innovate and safeguard their business, contributing decisively to supporting the entire community. CNA Ravenna is part of the national CNA system, consisting of a widespread network of 19 Regional CNAs and 96 territorial offices throughout the Italian territory (see Section 4.2).

CNA Ravenna is structured as an integrated and territorially rooted network based on 25 seats in the Province allowing for direct contact with the enterprises. The membership is composed by around 6.000 enterprises and 10.000 entrepreneurs, and is supported by operative structures (SEDAR, ECIPAR, CNA Innovation) active in the fields of consultancy and assistance, services and innovation, entrepreneurial and professional training.

CNA Ravenna is structured in 10 local offices and 234 operational offices, employing 2,562 people and representing over 140,000 individuals who give rise to a community of over 686.000 people. CNA RAVENNA, as part of the CNA national network, holds a constant dialogue with the institutions at local, regional and national level. CNA RAVENNA can work with SMEs at the Regional Level (Emilia Romagna Region) and disseminate project results and the models from e.g. H2020 projects at national level (Italy).

- at local level: widespread of tools and results with the newsletters and the house organ of CNA. Ravenna (send to about 7.500 SME); information also on the website of CNA. Ravenna
- at regional and national level: spreading of tools and results via the newsletters to the regional and territorial locations (about 100)
- at EU level: possibility to present results and tools during the cluster events of other European projects (to be defined).

5.3 Netherlands

Using RVO's web page on sustainable business parks and TNO's own experience as starting points, three initiatives have been selected to be described in detail, which together represent the types of initiatives encountered in the Netherlands.

5.3.1 Business Parks Energy Positive Foundation (BE+)

Overview and scope

Aim of the BE+ foundation is to call attention to the role of business parks in the energy transition, and to promote and facilitate collective organization of SMEs in business parks through effective park management (i.e., the Trusted Partner). The foundation exists since 2017. Its aim is to make 250 business parks energy positive and CO_2 neutral. At present, 35 business parks are connected to the foundation, sharing knowledge and contacts to achieve their goal. The approximate size of these business parks is generally between 100-300 SMEs.

The BE+ Foundation supports business parks with knowledge sharing and development of practical solutions (knowledge and tools). A network has been set up in which the participants share experiences and join forces in partnerships. This results in innovations that enable the implementation of sustainable measures and upscaling. Ultimately, business parks or clusters thereof must independently provide for their energy needs and, where possible, even supply them to their surroundings.

The basis of BE+ is a Quick Guide (Mulder et al., 2016) in which the process for a business park to become energy neutral is described for park managers and local entrepreneurial organizations. Also a training has been developed to enable the

persons responsible for the collective process. The foundation wants to make it easier for companies to monitor results by adapting the *Energy Potential Scan* in combination with individual energy scans. Finally, attention is paid to collective financing, the limited capacity of electricity networks, and the business cases of heat networks.

The BE+ initiative consists of activities of a multiplier organization (BE+) towards its members (trusted partners). SMEs are not directly involved. In the example "Hoorn80" in the next subchapter, a local initiative that was supported by BE+ will be described.

Set-up of the energy efficiency support initiative - Actors
The BE+ foundation was initiated by TNO (the Netherlands Organisation for applied scientific research), and OostNL (the regional development company for the provinces of Gelderland and Overijssel). TNO and OostNL are the board members. The start of the initiative was supported by two commercial companies with an interest in stimulating sustainable entrepreneurship in SMEs.

Currently, 35 business parks are a member of BE+. The membership is signed by the local entrepreneurial organization. In meetings they are mostly represented by their park manager. Sometimes they are represented by the municipality, local environmental agency, or energy advisor.

Practical solutions are developed in collaboration with relevant companies and organizations. In these projects around 25 companies are involved, ranging from energy advisors/consultancy agencies to technology providers.

In January 2020, the Sustainable Business Parks Covenant was signed by almost 30 public and private stakeholders. This covenant was initiated by the BE+ foundation. In October 2020 the covenant had been signed by 40 stakeholders. The public signatories represent all relevant layers of the Dutch government. The private signatories are from regional and local entrepreneurial organizations, acceleration initiatives, energy advisors, and ESCos.

- **SMEs and Energy service providers**: This is a national initiative, targeting local trusted partners. However, these local trusted partners do target the SMEs on the business parks with the tools, knowledge and capabilities supplied by BE+, and generally they do cooperate with energy service providers in the execution of their collective energy project.
- **Trusted partner**: BE+ focuses on establishing a local project management organization for the business park, connecting three entities: the park management, the local authority (municipality), and local business associations and/or business funds. All three organisations can function as a trusted partner for the SMEs on the business park.
- **Multiplier organizations**: BE+ is the multiplier organization.

- **Other**: TNO and the Regional Development Organisation OostNL operate the BE+ initiative.

Set-up of the energy efficiency support initiative - Organizing
Local entrepreneurial organizations are organized in a knowledge sharing network. The SMEs are collaborating in a trade organization or similar, through which the cooperation on energy efficiency is only one among many areas of cooperative efforts. The SMEs were not in a geographic proximity to each other, since this is a national initiative. However, the SMEs served by the local management organization will be geographically close (i.e. one business park). BE+ operates nationally, but the collective initiatives supported by/initiated by BE+ will be based on geographical proximity.

Set-up of the energy efficiency support initiative - Activating
The BE+ initiative activated Regional Development Agencies to engage with local entrepreneurial organizations to activate them to initiate collective energy efficiency projects in their business park. In the context of Gear@SME, these parties should be considered as multiplier organizations.

5.3.2 Hoorn 80

Overview and scope
The local entrepreneurial organization on Hoorn 80 has been involved in energy efficiency initiatives on the Hoorn 80- business park for at least 10 years. The activities in Hoorn 80 form the basis (together with two other business parks) for the Quick-guide and the BE+ initiative. The Hoorn 80 initiative has developed from collectively organizing energy audits, to collectively implementing energy measures (especially solar PV) to a regionally operating Energy Service Corporation (ESCo, ECWF), which fully supports SMEs in the realization of energy efficiency measures.

Set-up of the energy efficiency support initiative - Actors

- **SMEs**: 300-400 SMEs are located at the business park. 70% of which are a member of the local entrepreneurial association.
- **Energy service providers**: The initiative has developed into an ESCo. In this proces, auditors, energy advisors and technical experts have been involved in the execution of different activities. These activities have always been under the supervision of the local entrepreneurial association.
- **Trusted partner**: The local entrepreneurial association (HOC Hoorn) is the trusted partner. They have taken the initiative of all energy related activities on the business park. All activities have been performed in the name of this association. The ESCo has developed in a separate legal entity, in which HOC Hoorn has a majority share to guarantee the ESCo serves the interest of the SMEs on the business park.

- **Multiplier organizations**: HOC Hoorn has become a member of the BE+ initiative to spread its experience to other business parks. Furthermore, they have participated in multiple innovative projects in which TNO played the role of multiplier organization by disseminating results to other business parks.
- **Other**: HOC Hoorn has worked in cooperation with multiple regional governmental organizations, such as the Regional Development Agency, Environmental Agency and municipality to further the cause to make the business park energy positive.

Set-up of the energy efficiency support initiative - Organizing
The SMEs have organized themselves in the local entrepreneurial association HOC Hoorn. Through this organization, capacity has been realized to execute energy related projects, firstly through a park manager and in a later stage through the ESCo organization. The initiative closely follows the steps of the LEEN Network as described in the German Case in this document: https://www.odyssee-mure.eu/publications/policy-brief/networks-energy-efficiency.pdf. Energy is only one of the subjects on which the local entrepreneurial association HOC Hoorn is active. Others include: waste management, green maintenance, security, etc. The SMEs are all located on Hoorn80, the ESCo is operational on Hoorn80 and surrounding business park.

Set-up of the energy efficiency support initiative - Activating
The HOC Hoorn association combines its different topics (security, waste, etc.) in its communications (i.e. multiple benefits are involved). The combination of projects makes the organisation of a project team possible. If HOC Hoorn would only focus on energy it would not have been possible to build the organisation they now have. In its projects HOC Hoorn stresses the benefits of the collective: together you can negotiate a better price and you can share the costs of the process of selecting suppliers and feasibility studies.

HOC Hoorn uses the BE+ Quick Guide to tailor communication to specific SMEs. Most specifically this is done in direct conversations with entrepreneurs. In communication activities like flyers, newsletters and presentations, attention is paid to including different arguments to different target group segments. Surveys on motivation at SMEs are included in the initiative. Other actors than SMEs were also activated. Especially the energy grid provider and municipality were engaged to see if they can contribute.

Set-up of the energy efficiency support initiative - Enabling
The chairman of HOC Hoorn has good contacts with the SMEs on the business parks. Furthermore, organizational skills and entrepreneurial skills (needed to set up the ESCo) were already present.

Knowledge about different energy measures, audits, energy grids, were needed. Other enabling activities were:

- A subsidy from the province to be able to build capacity.
- Participation in innovation projects of TNO to acquire necessary information.
- Deployment of advisors and consultants to obtain relevant information and knowledge.
- Participation in BE+ events to share knowledge with other local business associations.

Set-up of the energy efficiency support initiative - Embedding

Energy has become part of the strategy of the local entrepreneurial association. Also, it has been embedded in the goals of the ESCo. The creation of the ESCo organization makes sure there is an organization that for a longer period of time will remain active on the realization of energy projects and is less vulnerable for strategic changes in the policy of the local business association of the SMEs.

Successful outcome and shortcomings

The key success factor of the Hoorn 80 initiative is the presence of the chairman of the local entrepreneurial organization. He has been responsible for the long-term vision and the enduring attention this initiative needs. Furthermore, the presence of a well-functioning entrepreneurial organization is very important. There should be an organization that is capable of executing projects and keeping contact with the SMEs on the business park. The multiple benefits approach of the local entrepreneurial organization also helps, they are not only in contact with SMEs about energy, but also about other topics, which sometimes are of more importance to the SME. In all these contacts they can also introduce energy issues and activate SMEs on this topic. The last success factor is that the organization became knowledgeable about energy and from this was able to initiate the ESCo, which makes it possible to facilitate more business parks in the area and become a more secure organization which is not dependant on one actor.

NB: The results of the Hoorn 80 initiative are monitored, but we do not have access to the results.

5.3.3 BEST Energy Check-up Enschede Harbour Area

Overview and scope

In the Enschede Harbour Area, an initiative has been developed by the Belangenvereniging Ondernemers Havengebied (BOH, local entrepreneurial association) and the BEST initiative (Climate-KIC project consortium). The goal of the initiative is to activate SMEs to invest in energy efficiency measures. The Enschede Port Area is the oldest and largest business park in Enschede. The business park covers approximately 133 hectares, where about 300 companies are located. With this, the site provides work for 6.000 employees. A wide variety of companies are

located on the site, ranging from traditional transhipment companies to technologically advanced production companies. Apollo Vredestein, Pilkington and Diversey are the largest companies established.

The local initiator of the project is the BOH, which has formed an energy team consisting of three entrepreneurs who are at the forefront of energy and who want to share their experiences to get the project off the ground and to persuade other entrepreneurs to join.

Set-up of the energy efficiency support initiative - Actors

- **SMEs**: Three SMEs are part of the energy team which provides guidance to the activities of the local entrepreneurial association.
- **Energy service providers**: The BEST initiative was involved, which is a co-operation between an energy advisor (CCS) and technical experts form TNO.
- **Trusted partner**: The local initiator of the project is the BOH, which is the local entrepreneurial organization, that plays the role of trusted partner in this initiative. All activities were executed in the name of BOH. Furthermore, the municipality played a role as trusted partner by actively addressing SMEs to participate in the collective initiative.
- **Multiplier organizations**: There were two multiplier organizations active in the initiation phase of the project. BE+ and the regional development agency OostNL, which brought the relevant parties (BEST, the province, the municipality and the local entrepreneurial organization) together.
- **Other**: The province was involved, providing funding for the activities of the local entrepreneurial organization in later stages. The BEST initiative contribution was funded from Climate-KIC.

Set-up of the energy efficiency support initiative - Organizing

The BOH provided a basic organization for the initiative. They provided the secretary through which SMEs on the business park could be contacted. The organization of the energy project was the responsibility of the BEST initiative, which provided the knowledge, skills and capacity to execute the initiative in the name of the local entrepreneurial organization.

The actors were organized as an energy efficiency network and the SMEs were collaborating in a trade organization or similar, through which the cooperation on energy efficiency was only one among many areas of cooperative efforts. The BOH is a local entrepreneurial organization for the business park. They provide services like security camera's, collective waste management, etc. in addition to their energy related activities. The SMEs are all situated on the Enschede Harbour Area business park.

Set-up of the energy efficiency support initiative - Activating
During the annual meeting of the BOH, a working session was organized to inform companies about the energy project. Furthermore, an energy team has been created of three SMEs that provided guidance to the project and who played a role as ambassador for the project. Also, considerable effort has been spent to obtain funding from the municipality or province to activate other actors than SMEs.

There were no direct financial incentives or legal requirements for the SMEs to participate, although the energy audit was provided free of charge. Activation efforts were not specifically tailored to the SMEs and their motivations. For example, multiple benefits were not involved in the strategy for activating the companies. However, the BOH offers services on topics other than energy.

Set-up of the energy efficiency support initiative - Enabling
The local entrepreneurial association had already organizing skills and interaction skills. Skills on energy measures and financing was supplied by the BEST initiative. The BEST initiative provided the capacity needed to execute the energy project.

Set-up of the energy efficiency support initiative - Embedding
During the project, funding from the province has been obtained, through which the local entrepreneurial organization can get the capacity to execute the initiative over multiple years.

Successful outcome and shortcomings
In the first stages of the initiative, the absence of funding for the local entrepreneurial organization proved to be a major show stopper. It was expected that the capacity of the BEST initiative would be sufficient to execute the project. However, it was found that considerable effort was needed from the local entrepreneurial organization for contacting SMEs. The process of obtaining funding for their activities proved to take a long time. In future projects funding for the trusted partner is essential.

5.3.4 Energie Collectief Utrechtse Bedrijven (ECUB) - An energy collective of companies in the city of Utrecht

Overview and scope
ECUB is a non-profit energy collective. It started in 2015 with an energy cooperation named “Energiecollectief Lage Weide (ECLW)”, which was changed to ECUB in 2017. Their mission is to make sustainability simple, accessible, and feasible for every entrepreneur on an affiliated business park. At the moment, their working area comprises the business parks of Lage Weide en De Wetering - Haarrijn in Utrecht (see Figure 7), where the ECUB initiators are also located themselves. Together, these business parks host around 1.000 SMEs. However, a growing number of other business parks request ECUB for support. Therefore, ECUB expects to expand its working area in the coming years, in cooperation with the Utrecht Entrepreneurs fund,

from which it also receives a contribution in their exploitation costs in addition to the membership fees. Most of their members (> 50) have an annual energy consumption of between 50.000 - 10mln kWh. Together, their members have an annual energy consumption of 25.000.000 kWh, which is 15.7% of the total energy consumption in ECUB's working area.

Figuur 1 Business parks in the municipality of Utrecht.

All sources used to describe this initiative are from ECUB's website, which includes, amongst others, their annual reports, public minutes of annual member meetings, the procurement protocol, and the handbook.

Set-up of the energy efficiency support initiative - Actors

- **SMEs**: In 2017, the collective reported to have 45 members. Later reports indicate they currently have more than 50 members and are growing rapidly. Most of the members are not the smallest, but also not the largest energy consumers. Initially, it was mainly industrial entrepreneurs and construction companies, currently the emphasis is more on logistics and distribution companies.
- **Energy service providers**: ECUB has two types of relationships with energy service providers. Firstly, there are partners from which ECUB directly purchases a product or service. At the moment, the products are: solar PV panels, LED lighting, and green electricity. To enable collective procurement through a procedure that is transparent to both the member SMEs and the energy service providers, the collective has a document describing a set of weighted procurement criteria. Secondly, there are partners who offer a product or service directly to SMEs. These partners have the trust of ECUB, but ECUB is not involved in any business deals between product or service providers and individual SMEs. Through affiliated partners, ECUB also offers support to their members with conducting energy scans and implementing measures, including measures beyond those obligatory by law.

- **Trusted partner**: ECUB, in person of its founder and chair Bert Strijker, is seen as the trusted partner for helping SMEs becoming more sustainable. To reach the SMEs, ECUB makes use of connections with other organizations who are seen as trusted partner by the SMEs (predominantly the business associations). These partners represent the interests of SMEs, but they do not have specific expertise or project infrastructure for sustainability themselves. That is where ECUB comes in.
  ECUB regards their role to be a connector between various parties such as companies, governments, business organizations, installers, and knowledge institutions. ECUB's view on their own role seems to be endorsed by their members. In the minutes of the annual meeting of 2019 it was noted that according to the members, ECUB should motivate knowledge sharing between parties and should be a connector between companies, project initiators, and technical expertise involved in project execution. Members have also requested ECUB to build a toolkit for becoming "gas-free" and expressed a need for a platform to exchange experiences with other entrepreneurs on becoming gas-free. Monitoring results was also mentioned as an important role for ECUB.
- **Multiplier organizations**: ECUB was initiated by several entrepreneurs on Lage Weide, and is headed by a professional manager who has, amongst others, been park manager in another region. In the initiation process, the park management of Lage Weide (ILW or Industrievereniging Lage Weide) and the municipality of Utrecht played an important role. Locally, the municipality can be seen as a multiplier organisation. They also play this role in the scaling-up of the ECUB initiative to other business parks within the municipality. The same goes for the Province of Utrecht. Furthermore, there is a relation between ECUB and the multiplier organization Clok (also part of GEAR@SME), but they did not play a decisive role in the launch of the initiative.

  ECUB cooperates with the park management of Lage Weide (ILW or Industrievereniging Lage Weide) and De Wetering-Haarrijn (Vereniging Parkmanagement De Wetering-Haarrijn), the latter of which is supported by the international engineering firm SWECO (who considered to partner in the GEAR@SME consortium, but in the end decided not to for reasons unrelated to the project).

  The Utrecht Entrepreneurs fund supports ECUB. In 2019, ECUB received €115.405,68 to continue the activities for sustainability in Lage Weide. ECUB is also supported by the Municipality of Utrecht, the Utrecht Economic Board, The Utrecht Energy Fund, and The STIP (Innovation and Promotion Foundation De Wetering-Haarrijn).

  Government agencies have noticed and appreciated ECUB's entrepreneur-driven approach. After successfully pursuing the construction of a hydrogen filling

station in their working area, ECUB has been asked by government agencies to write a hydrogen implementation programme for the region Utrecht for the period 2019-2023 (H2U project). ECUB is also partner in the abovementioned portal and information campaign wattjemoetweten.nl.

A growing number of other business parks are requesting ECUB for support. The approach is currently implemented in two additional business parks in the municipality of Utrecht. ECUB is also trying to implement the approach in business parks in the province of Utrecht and wants to make its experience available for business parks in the rest of the Netherlands. The initiative is extremely well-documented. According to ECUB's manager, this is done on purpose to enable others to learn from the initiative.

- **Other**: Ecotransferium De Wetering is another initiative in the region that is important to mention. At business park De Wetering-Haarrijn, this initiative promotes sustainable mobility among the SMEs.

Set-up of the energy efficiency support initiative - Organizing

Legally, the ECUB collective is a co-operation. ECUB consists of a General Members meeting, a daily board, and a manager who together with a communications expert runs the project bureau. Members are in charge in a collective. The cooperation is non-profit and works with a fit-to-purpose occupation. Its way of working is described in statutes and house rules, which have to be approved by the members. As mentioned previously, ECUB also has a procurement protocol for collective purchasing of products and services on behalf of the members.

Although the SMEs in the network are approached and supported individually, the purpose of ECUB is explicitly to exploit the "power of the collective" to get more accomplished than the individual companies are capable of by themselves. Therefore they aim to develop and strengthen the network to facilitate more complicated collective projects in the future, such as the development of heat networks or identifying opportunities for hydrogen applications. To this end, SMEs are kept involved by continuously informing them on new developments, new techniques, and changing policies and regulatory requirements. While ECUB believes in the strength of the collective, they also stress the responsibility of individual entrepreneurs. Members must be motivated and willing to comply with the legal frameworks for energy-saving measures that apply to them. ECUB members are regarded as companies who are motivated to become sustainable, and they have to show it, if they want to stay a member. To this end, ECUB also offers support to SMEs with taking energy measures that surpass what is legally required.

ECUB only admits SMEs as member if they are also member of a partnering business association. The reason for this, so they state in their handbook, is that individual SMEs that are not already part of a collective of some sort are extremely difficult to reach. ECUB approaches SMEs through these other organizations, which SMEs

already trust to represent their interests and to bring matters to their attention that are of relevance to them.

It is important to describe ECUB's business model, since valuable lessons were learned while developing it on what works and what does not. ECUB did not start out as a co-operation straight away. In the pioneering phase, they have experimented with a percentage fee. That is, a percentage of the member's financial savings as a result of energy saving projects facilitated by ECUB would be billed to ECUB to cover its costs. However, this proved to be a psychological obstacle to companies to use ECUB's services. To date, it is unknown why exactly is the case. It was clear, however, that a more acceptable rationale had to be found for financing ECUB's services.

It is known that energy saving is for most companies a challenging affair, that is unrelated to their core business. At the same time it matters to them, either for regulatory reasons, economic reasons, or both. Companies therefore do appreciate to receive help with this process. It is therefore in their collective interest that this help is organized. Another argument for collective funding is that the energy transition is in everybody's interest, and making it happen is a joint responsibility. It therefore made sense to frame ECUB's services as serving a collective interest, which should be paid for from collective resources. ECUB does ask for a member fee, but is largely funded from the Utrecht Entrepreneurs fund.

The Utrecht Entrepreneurs fund is a foundation that helps entrepreneurs to take initiatives and facilitate investments with a collective interest for entrepreneurs within Utrecht. The foundation is filled by a surcharge on non-residential property. This surcharge is collected by the municipality Utrecht and is then paid out as a subsidy to the entrepreneurial fund. The fund ensures that each area invests this money in a collective goal. Indirectly, ECUB is thus fully paid for by local entrepreneurs. An advantage of this is that ECUB feels as their own initiative, and its message is more readily understood and accepted.

The existence of an Entrepreneurs fund from which financial means can be drawn is a prerequisite for ECUB to serve a business park. There are, however, municipalities that have no Entrepreneurs fund. In these cases, it is more difficult to come to an arrangement in which ECUB can serve SMEs.

Set-up of the energy efficiency support initiative - Activating

The handbook of ECUB mentions that apart from self-application, active recruitment is also used to find new members. To effectively reach out to SMEs, particularly the smaller ones, ECUB makes use of the platform and communication tools of the business associations. They also try to link to communication from other organizations and initiatives that are already working on sustainability in the business parks. Other channels are their own website, social media channels, direct communication,

presentations on local events on business parks, and promotion of event in which ECUB participates. They also issue regular press releases and actively share success stories.

Examples of communication infrastructure that is already present: The STIP holds annual networking meetings where companies from business park De Wetering-Haarrijn can pitch their ideas for innovative sustainability-related projects. De Wetering-Haarrijn also has a Business Club, which aims to foster contact between companies at the business park by organizing breakfast sessions, business visits, networking meetings, and other types of social events such as Christmas drinks or herring party.

As soon as an SME states it interest in becoming a member, the SME receives a personal visit by the manager or account manager of ECUB. During this visit, ECUB and the SME get acquainted. It is explained what membership of ECUB entails. The membership has clear advantages, but these can only be obtained if the SME commits to be in compliance with the regulatory requirements for energy saving within, ultimately, three years. If the SME does not succeed, its membership will be cancelled and the SME has no longer access to the collective advantages.

Once registered a member, the first step for the SME is to have a Quick Scan conducted to know which measures the company can take. The energy service provider performing the Quick Scan provides assistance for either one or two years (depending on contract type) with implementing these measures. The energy service provider monitors the activities, of which ECUB also receives the reports. At the end of the supporting period, the energy service provider writes an evaluation report which is also shared with ECUB. At regular intervals, about 2-3 times a year, ECUB also maintains contact with the SME. If too little happens, they motivate the SME to take action.

After this first phase, ECUB keeps receiving annual reports of their members' energy consumption. If anything strange shows up in these reports, it is discussed. Further plans for energy saving at the SME are discussed with the ECUB manager. The subsequent trajectory is tailored to the individual companies and is therefore not described in the handbook.

ECUB holds annual meetings to which both members and non-members are welcomed. At these meetings, members and partners of ECUB have the opportunity to present themselves. The meetings are concluded with networking and drinks.

- **Multiple benefits**: There is a collective multiple benefits approach of some sort, to some extent. Apart from the identification and implementation of cost-reducing energy measures, ECUB does try to create other types of benefits for SMEs to participate. Generally, ECUB has the ambition for its business parks to become frontrunner in the energy transition, and experience positive spin-off

effects from this. ECUB has also implemented a four-level certification system in collaboration with the municipal enforcement agency. ECUB decides which level a member has attained, and the member receives a door sticker corresponding to the level. The level is evaluated annually, and companies are then awarded a higher level when justified. The results are published through newsletters, the ECUB website and partner websites, unless the company objects to this. This is likely to create positive peer pressure, although the psychological effect of public naming and faming on SMEs has not been formally investigated. Obtaining a level of certification will contribute to a positive sustainability image for ECUB members. But apart from that, it also aims to ensure that certified companies are less likely to be visited by municipal enforcers. This is an important and unique benefit, since enforcement agencies do have the right to enforce randomly. In practice, however, they appear to be willing to be lenient towards ECUB members. To this end, the municipal service of Surveillance and Enforcement receives quarterly updates of ECUB's members list.

- **Financial incentives to participate**: ECUB members receive a discount on collectively purchased products and services, such as solar PV panels and green electricity. However, they also pay a member fee, which was 350 euros. Membership of a business association, which is a requirement to join ECUB, also comes at a fee.
    - The municipality of Utrecht has the ambition to be climate neutral in 2030. To this end, ECUB and the municipality have developed a public-private partnership. Through ECUB as implementing organization, their members receive a financial contribution for taking non-statuary energy measures. This applies to energy saving measures as well as to renewable energy.
    - The Utrecht energy fund is a public fund for enabling investments in energy efficiency and renewable energy. Companies can apply for a loan either between 5k and 50k or over 50k, with a payback time of maximum 10 years, at competitive interest rates. The fund only finances projects that, despite a good quality business case and initiator, appear to be insufficiently funded or not financed by regular market parties. The fund is therefore never a competitor to market parties. They are often a partner: together with regular financiers such as banks, they make sustainability projects possible that would otherwise remain on the shelf. Up to 75% of the total project costs can be funded.
- **Legal or regulatory requirements to participate**: Participation is not required, but is motivated by the legal and regulatory requirements. Members of the network receive assistance with fulfilling their obligations as well as positive peer pressure to attain this goal within three years, maximum.
- **Tailored activation efforts**: ECUB distinguishes between different target groups, and for each of these groups they have a targeted communication plan.

Regarding SME target group segmentation, ECUB distinguishes between 'members' and 'potential members'. The group of potential members is further segmented into (1) Potential members who are members of an entrepreneurial organization on a business park already affiliated with ECUB, and (2) Potential members on business parks that are not yet affiliated with ECUB. For both groups, different communication strategies and channels are being used.

- Apart from SMEs, their main target groups are the business associations, park managements, Utrecht entrepreneurs fund, municipalities, and energy service suppliers. Business associations are perhaps an even more important target group to ECUB than individual SMEs. Because local business associations are trusted by SMEs to represent their interest, and because individual SMEs are very hard to reach, ECUB can only effectively reach out to the SMEs through these associations.

- **Other**: It is likely that SMEs hear of ECUB, sooner or later, through a business association or one of the other partners they already know and trust. ECUB is regularly asked to present itself at business park meetings. So activation is an ongoing activity of all affiliated partners.

ECUB's networking activities target park managements of other business parks that are not yet part of their working area, as well as municipalities surrounding Utrecht. As mentioned before, ECUB eventually reaches the SMEs through these intermediaries.

Set-up of the energy efficiency support initiative - Enabling

The consulted sources give the impression that the manager of ECUB is an experienced manager. His public CV reports that he has been a park manager (outside Utrecht), and project manager. With such an experienced manager, ECUB had a good starting position; they did not need to invent the wheel from scratch. The lessons that were learned while developing the initiative have been described in their handbook, the most important ones have been reported elsewhere in this text.

ECUB's experience shows that the commitment of business associations is essential for the success of collective sustainability. Business associations provide a platform for reaching individual companies on a business park. Entrepreneurs often have confidence in matters advocated by the associations. Therefore, these associations are an important target group for ECUB. They are, one could say in GEAR@SME terms, the 'general' Trusted Partner who decides which 'specific' Trusted Partners (in this case, for energy efficiency) are worthy of bringing to the attention of the SMEs they represent. If they are convinced of the value of the initiative, they will promote it among the SMEs at the business park. Networking, mainly by the manager, is a crucial factor for the success of ECUB.

ECUB also learned that once companies have successfully been activated, organized, and enabled to take measures, they should have room to continue in their own way. In doing so, they should meet support and flexibility from authorities, for example regarding the order in which measures are being taken. For example, while energy efficiency is seen as a first step from policy point of view, for many companies it is much more attractive to invest in solar PV first. With the money saved with that investment, other sustainability projects can be funded. ECUB also suggests that new companies in business parks with proven sustainability ambitions are rewarded with a discount in the lot price on the business park.

The founder and manager of ECUB, Bert Strijker, mentions that he founded his first energy collective in 2015 after observing that, although subsidized energy scans for entrepreneurs were available for business park Lage Weide, they were hardly being used. According to Bert, this is because there was no clarity on the follow-up process after taking these scans. SMEs could not oversee this. So why, then, take a scan at all? Therefore, his philosophy is that guidance for SMEs must be available for every step in their journey towards becoming sustainable.

Set-up of the energy efficiency support initiative - Embedding

ECUB is strongly embedded in its working area, since the initiative originates from companies on the business parks. The fact that ECUB was initiated by entrepreneurs from the area as a non-profit organization are, according to the ECUB handbook, important prerequisites for creating trust. Furthermore, the aspect of collectivity should be assessed and SMEs should experience ownership over the collective. With ECUB, this is the case because the companies pay for it themselves, through the member fee and the Utrecht Entrepreneurial Fund. Finally, ECUB utilizes every opportunity to put their members in the spotlight and celebrate successes, thereby reinforcing feelings of “us” and of “successful”.

As already mentioned above, networking with other locally trusted partners and multiplier organizations in the area are key to ECUB’s success. But the most important condition for ECUB’s existence and subsequent development was the funding. Obtaining funding from the Utrecht Entrepreneurial fund proved to be the key to make the initiative grow, but this has not been an easy process. To other initiators of energy collectives, ECUB’s advice is to start seeking cooperation with an Entrepreneurial fund as soon as possible - unless, of course, other ways of funding are used. By absence of an Entrepreneurial fund, which also takes years to create, ECUB advices that local authorities provide the necessary funding, at least in the first phase.

Successful outcome and shortcomings

The initiative is widely appreciated for actually accomplishing projects. The 2017 report of ECUB’s annual general member meeting reports that with their support, 25.000 solar panels have been placed in their working area. Many companies have also signed a public statement of interest in placement of solar PV on their roof. This

public declaration of intention has an important motivational function for the companies. Of the annual SDE+ subsidy round (see Chapter 8), 69% of the total awarding fell in their working area. LED projects have amounted to an annual total saving of 554.069 kWh within the companies, and the annual CO_2 reduction is 8000 tonnes. In 2018, a member of ECUB on business park De Wetering -Haarrijn realized a large solar PV roof (1480 panels). In 2019, ECUB has realized a hydrogen filling station. They are currently also developing a partnership with a provider of electric mobility.

There are more indications that the initiative is flourishing. Firstly, ECUB is currently working on the installation of an 'operating company' so they can hire staff and further professionalize the services to their members. Secondly ECUB is considering to extend its working area to other business parks. Finally, after successfully pursuing the construction of a hydrogen filling station in their working area, ECUB has been asked by government agencies to write a hydrogen implementation programme for the region Utrecht for the period 2019-2023 (H2U project). The government agencies noticed and appreciated ECUB's entrepreneur-driven approach.

5.4 Romania

The description below focuses on available financial support for energy efficiency in SMEs. The reason is that funding is an especially critical challenge in Romania. In addition, there has so far been no coordinated initiatives directed towards SMEs working collectively with energy issues.

5.4.1 Financing of energy audits and energy efficiency measures

Overview, scope and activities
During 2005 – 2018 an initiative from EBRD (European Bank for Reconstruction and Development) operated in Romania, called Small Business Support (SBS) which provided co-financing for performing energy audits in SMEs. Their support was materialized for a relevant number of SMEs. Another significant initiative was related to the financing tool RoSEFF (Romania SME Sustainable Energy Finance Facility), by EBRD as well.

A large number of SMEs benefited from these energy efficiency grants.
On the other hand, neither in the national authorities nor in the associations of SMEs, the energy efficiency subject has been addressed on a systemic level, with coordinated actions and policies. A fact is that the SMEs energy use is not recorded in statistics for the relevant industries and building owners.

Romania achieves below the EU average when it comes to access to finance. Traditional bank finance is not easy to access, as it could be a long and time-consuming process. Since 2008, Romania has implemented several support programs to improve access to finance for SMEs and start-ups, such as tax incentives, loan

guarantees and grants. However, all the initiatives below are limited to individual SMEs and do not include or promote any collective approach. Mostly the initiatives are being embedded at national level, with some specification regarding the main beneficiaries which are targeted.

At this moment, a number of financial schemes have been implemented under the COVID-19 context, to support the SMEs in keeping their business safe, but one of these programs is relevant to energy efficiency, the so called ElectricUp programme released by the Ministry of Energy – Energy Efficiency Direction, which will finance up to 100.000 Eur, 100% free money the installation of PV panels and EV chargers on SMEs and HoReCA (Hotels, Restaurants, and Catering) facilities.

Measures that were implemented in the last two years:

- The 'National Programme for Micro-Industrialisation' (RO: Programul national de microindustrializare) which has as objective to encourage the creation and development of SMEs by supporting investments through grants up to 95,000 EUR, for the modernisation of equipment, including energy efficiency.
- The 'Developing marketing activities for market products and services' (RO: Dezvoltarea activitatilor de comercializare a produselor si serviciilor de piata) that aims to support economic operators, including SMEs, to offering grants for increasing their competitiveness and adapt to EU standards.

Other important initiatives for SMEs in form of support schemes:

- Open calls for European Funds as non-reimbursable financial support, up to 80% for SMEs: Large Infrastructure Operational Programme – Programul Operational Infrastructura Mare (POIM):
    - POIM 6.1 – Call for projects to support investments in the production of electricity and/or thermal energy from biomass/biogas and geothermal energy;
    - POIM 6.2 – Reducing energy consumption for industrial consumers, within a period of maximum 5 years from the completion of the project;
    - POIM 6.4 – Call for projects to support investment in high efficiency cogeneration.
- EEA and Norway Grants, different calls such as Renewable Energy, Energy Efficiency, SME Growth.
- Electric-up (2020). The programme aims to support SMEs for installing photovoltaic panels and electric vehicle (EV) chargers, with a maximum grant of 100.000 EUR, representing 100% of the eligible costs.

For the POIM program, the maximum value of the grant awarded for a project is EUR 15 million. Also, the financing rate may not exceed 80% of the eligible costs of the project for small enterprises, or 70% for medium-sized enterprises (60% for large enterprises). See also the Romanian EU fund's website.

Regarding POIM 6.4 which is dedicated for increasing savings in primary energy consumption resulting from high-efficiency cogeneration, the potential beneficiaries are industrial companies or a representative of an industrial park. The criteria for POIM 6.4 includes relevant energy consumption necessary for the cogeneration unit implementation. Also that the NACE code have to be from the section B (Extractive industry) or C (Manufacturing industry).

Aspects especially relevant from the GEAR@SME perspective
In relation to the GEAR@SME project, the actors and stakeholders that may be involved in local energy collectives focusing on SMEs are highly important.

In Romania there are around 100 Energy Auditors for industry and around 900 Energy Auditors for buildings. These are linked to energy service companies (including energy audit and energy management consultants and ESCOs) which may be able to act as trusted partner towards SMEs.

Further, there are industrial parks, Local Counties and Local Councils who are the owners of industrial parks, universities, and local energy agencies, which all may play important roles as multiplier organizations.

In general, major stakeholders are categorized in state, private and civil. The legal authorities established the energy efficiency and carbon emissions reduction trading schemes, which follow the EU Commission roadmap. The Ministry of European Funds is focusing to give funding under several programs for energy efficiency, in both industry and buildings sector. The Ministry of Environment is approaching funding under other programs for reducing carbon footprint, according to the EU targets. The Ministry of Energy is working on a dedicated energy efficiency fund.

Even though there are many kinds of stakeholders in the country, from different areas, with common individual targets, it is clear that there is a lack of initiatives that aim to develop and support networks between SMEs in energy efficiency. Initiatives which targets SMEs individually are present, but not enough. The Horizon 2020 Project called SMEmPower Efficiency targets energy professionals and staff from SMEs to train them through an Education & Training (E&T) programme at financial and technical level to gain trust and to empower SMEs to undergo energy audits and implement energy efficient solutions.

A whole range of different actors are involved actively in organizing and enabling activities to support SMEs, although not as coordinated networks in geographic proximity to each other. Examples of actors and activities:

- Civil societies, including associations, are communicating through different channels, such as seminars, workshops, debates etc. for sharing knowledge,

problems etc. Also, these actors are in strong relation with the state actors, especially the Ministry of Economy, Energy, and Business Environment.

- Different dedicated events are working as main tools in order to build an energy efficiency network. Each of the stakeholder category try to contribute with added value to this energy efficiency network in order to support and motivate SMEs for implementing energy efficiency measures and to build trust between them and SMEs.

Successful outcome and shortcomings

Implemented projects will be served as good practices for the future initiatives, with similar outputs and targets, such as promoting economy with reduced carbon dioxide emissions, supporting sustainable integrated urban development, increasing the competitiveness of SMEs etc. Also, other Horizon 2020 projects and relevant outputs shall be shared together with lesson learned.

5.5 Sweden

5.5.1 Energy Efficiency Networks (EENet)

Overview and scope

Energy Efficiency Networks (EENet) is a Swedish, national initiative, which is set-up as a time-limited project, co-funded between the Swedish Energy Agency (SEA) and the National regional fund programme (financed by the European Regional Development Fund). Further, there are two regional organisations - County administrative boards ("Länsstyrelser") or regional energy offices - involved in the initiative. The initiative is specifically targeted towards SMEs with an annual energy consumption above 1000 MWh. SMEs from all types of sectors have been eligible for participation. The initiative started in July 2015 and runs until the end of 2020.

Within the initiative, in total, 34 local/regional energy efficiency networks with between 8 and 12 participating companies have been initiated, set-up and run for about four years (43 networks were originally initiated, but 34 have been run for the entire period, see results below). In total, 386 SMEs have been involved at some time during the project. In 2020, 243 SMEs were still fully active. In addition, a smaller number of non-SMEs (larger companies) has participated in the networks, but outside the project and without any individual support (called follower companies). Each network has a regional coordinator, and each coordinating regional organization runs between one and three networks, depending on the size of the region and the initial interest from SMEs in the region. In addition, there is an energy expert tied to each of the networks, which provides technical and energy related advice and support. (Höckerdal, 2019)
Each company pays a fee for participating in EENet (about 4,000 € in total, or 1,000 €/year). They receive access to the network and coordinator, participation in systematic

network meetings, and individual support from the project (via the energy expert) corresponding to a maximum of 150 hours per company.

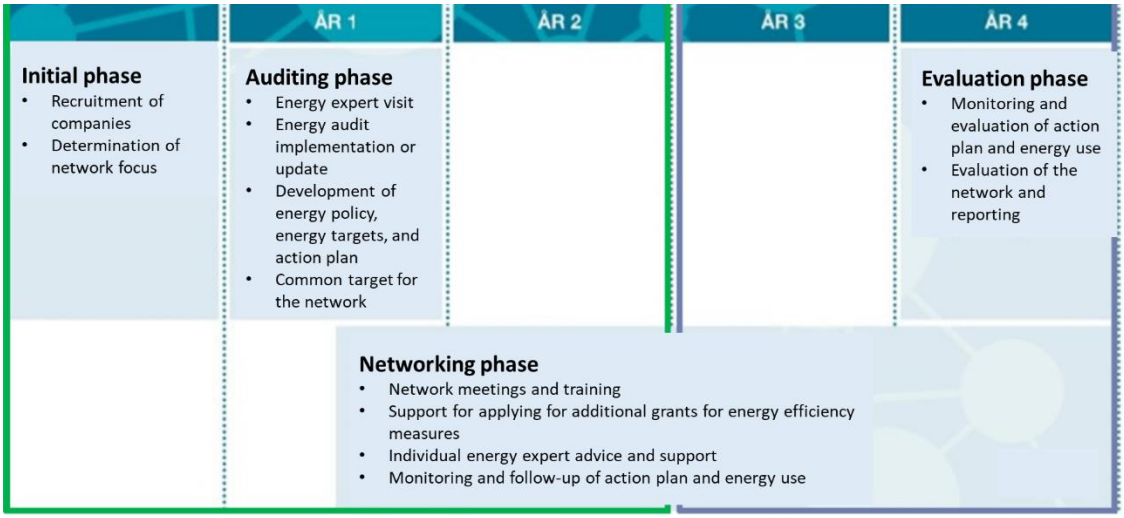


Figure 7 Overview of the main phases of the EENet methodology

The network implementation follows a common methodology, which is based on experience from the German LEEN-networks and on national experience from earlier, more limited, energy network initiatives. (Köwener et al., 2014; Schlomann, 2016) The methodology is based on four phases (see Figure 8):

- An Initial phase, which takes place before the actual four-year networking period. The initial phase is mainly dedicated to recruitment of SMEs for participation in the networks. In addition, the focus of each network - as a mixed network or sector specific network - is determined.
- The Auditing phase, which is planned for the first year of the networking period, includes a visit at each company by the coordinator and the energy expert. During this phase, the SME should implement an energy audit (or update an existing audit) and develop energy management elements such as an energy policy, energy targets and an action plan. The actual implementation of an energy audit is not included in the project but needs to be carried out by the SME, separately (normally by commissioning it to an energy service company). However, if the company has a recent energy audit, the support available from the energy expert within the project could be sufficient for updating this audit. During the EENet project, there was also a general possibility for SMEs to apply for specific financial grant that could be used for partly financing an energy audit. Within, the project they received support for applying for this grant. Further, common targets for each network is agreed in this phase.
- The Networking phase, which runs over most of the network/project period of four years, and partly in parallel with the Auditing (and Evaluation) phases. During the Networking phase, physical network meetings with different thematic foci are arranged by the coordinator. The network meetings

often take place at one of the network companies. The meetings are, in general set-up as a combination of training/education and networking for mutual learning and exchange of experience between participating SMEs. The organisation and implementation of these meetings have proved to be important for the motivation and energy efficiency results of SMEs, and are therefore further elaborated on below.

- The Evaluation phase, which includes evaluation of project results both in terms of the development of the maturity of the SMEs energy efficiency work, and in actual quantitative energy efficiency improvements. Further, the evaluation takes place at three levels - for the individual SME, for the network as a whole, and for the entire EENet project (for all networks in aggregate). The EENet methodology describes the Evaluation phase as taking place during the fourth year. In reality though, it has been carried out as a recurring evaluation at the end of years two, three and four. Aiding the evaluation, mainly two different tools have been used. Firstly, the EENet monitoring tool, which is an excel tool for following up on each company's energy use and energy efficiency measures, providing a consistent methodology for the quantitative evaluation. Secondly, monitoring of qualitative results has been facilitated partly through questionnaires to the SMEs at different points in time during the network period, partly through continuous monitoring via so called focus groups. The latter was carried out by an independent evaluator who visited network meetings and had structured conversations with the SME groups, without coordinators and energy experts. (Sweco, 2019)

- The EENet project also includes a method support programme for the coordinators. This programme consists partly of support material, partly of activities organized by the SEA including both educational elements and facilitation of peer support within the coordinator group and from other actors within the organization (see below). Development of educational and support material was organized by the Swedish Energy Agency and includes, amongst other: guide for recruitment of SMEs, guides for each of the network phases, presentation material for network meetings (to be used as a starting-point for coordinators), networking methodology (development of the coordinator role as process leader and motivator), information material on energy services, energy efficiency measures etc. All material has been available to all coordinators, energy experts and support organizations via a common project site (not open). Here, also the coordinators have been able (and encouraged) to share their own material and tips (good advice, lecturers, presentations etc).(Höckerdal, 2019)

Set-up of the energy efficiency support initiative – Actors

- **SMEs:** Any type of SMEs with energy usage above 1,000 MWh/year. Of the 34 EENet networks currently active there are about a third sector specific ones, including vicarage networks (churches), networks of large grocery stores and manufacturing industry networks. The other two-thirds are mixed networks. The role of the SMEs is to develop their energy efficiency work and implement energy efficiency measures, but also to contribute to the development of other companies in the network by actively participating and exchanging experience, contacts and competence.
- **EENet coordinator:** The EEnet coordinators are central to the EENet project. The coordinator acts primarily as a *trusted partner* for the network, and functions as a hub for all network activities and a link between the SMEs and the energy experts (and indirectly to all other involved actors). The coordinator organizes network meetings, acts as important motivator and support the companies in their energy efficiency work at a more general level. The profile of the coordinators varies quite strongly between networks – in some cases they have thorough technical and/or energy competence, in other cases they have primarily the competence of experienced process leaders, focusing more on organization, motivation and providing necessary contacts for the SMEs. The coordinators also interact directly with the overall EENet project through the Swedish Energy Agency. The coordinator group may also have a long-term function as an informal *multiplier organization*, partly since they form a strong energy efficiency network of their own, partly since each one represent a regional energy office or a regional authority (covering, in total, the entire country) with direct linkages to other regional energy efficiency work and support channels.
- **Energy experts:** In the EENet project there are a group of three energy experts appointed that each are linked to 3-5 EENet networks. The energy experts responsibilities include taking part in network meetings and contribute with energy expertise/training elements, quality control and update of existing energy audits, supporting companies that need to commission new energy audits, support for development of a structured energy management work, for setting-up and implementing action plans and for monitoring energy use via the EENet monitoring tool. Further, the energy experts should coordinate their work with the coordinator and with other energy experts and participate in workshops with the SEA. Within the EENet project, the energy experts thus represent the *energy service supplier*, but is formally linked to the project. Other energy service suppliers get involved on more of an ad-hoc basis, as providers of energy audits and as invited presenters at network meetings.
- **Ambassadors:** In addition to the energy experts, there has also been an ambassador programme to further support the coordinators. The programme consisted of six ambassadors with specific complementing expertise profiles within for instance networking methodology, process leading, lean energy, and industrial production. The ambassadors offered additional material and input for network meetings, based on their specific expertise. The purpose was to increase the

competence level of the activities and contribute to keeping up a continuous interest and motivation of the SMEs (and coordinators). Also the ambassadors represent in this initiative *energy service suppliers*.

- **The Swedish Energy Agency**: The SEA is responsible for overall project management, coordinator of all involved partners and controller of the initiative. It has also taken the initiative to the project and collaboration with regional actors. As such, it functions for this initiative primarily as a facilitator and a *multiplier organization*, providing the method support programme and, directly and indirectly via e.g. energy experts, competence development for the coordinators. Further, the SEA is responsible for overall project follow-up and evaluation. In general, the SEA also plays an important role as a support channel for energy efficiency improvements in SMEs.
- **Other:** In some networks, more regionally/locally relevant actors – representing energy service suppliers, equipment suppliers or energy utilities – have been invited as presenters at specific network meetings. However, these have not had any more regular role in the network. Further, the SEA has utilized expert consultants for monitoring tasks, in training activities directed at the coordinators (including both technical areas and motivation techniques and employee engagement), and for development of guides and information material.

Set-up of the energy efficiency support initiative – Organizing

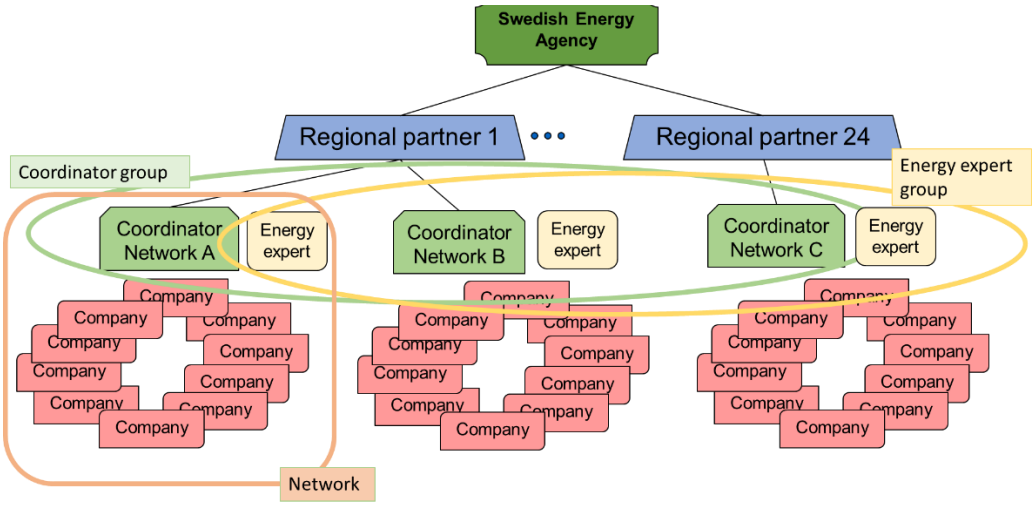


Figure 8 The organization of the EENet initiative.

The organization of the entire EENet initiative (see Figure 9) becomes quite complex. For each network, the organization is on the other hand quite simple – there is a group of SMEs networking, led by a coordinator, which is supported by an energy expert. However, it is the overarching organizational structure that is unique to the programme, and which provides some key elements for the successful implementation. For instance, the formation of an active coordinator group, and the overall coordination from the SEA, facilitate the support and competence development system that enable

the coordinators to be efficient network leaders, and exchange between energy experts ensures access to energy knowledge at a high level. Further, the SEA top-down management, common methodology and the organizational links have been necessary to develop and carry out a systematic methodology for monitoring and evaluation of results.

As mentioned above, the composition of the networks differs – some of them are sector based and some are mixed. All networks are regionally based, which means that the SMEs are close enough geographically to know about each other and to be able to meet physically at network meetings. However, since the amount of energy used is one of the criteria for participation, many SMEs are prevented from participating. Consequently, there are typically not sufficiently many SMEs that are eligible for the networks in one location, which means that the SMEs of the EENet networks are not co-located.

Set-up of the energy efficiency support initiative – Activating
The activation of SMEs consists of two parts. Firstly, they need to be activated to enrol in the project, i.e. to be recruited to the network before it actually exists. Secondly, they need to be motivated and activated to stay in the network and to engage actively in the energy efficiency work. These two parts are quite different and have, consequently been approached differently. (Höckerdal, 2019)

Recruitment of companies to the networks:

- The regional coordinators were involved in the project before the networks were established, and the recruitment of companies was their first main responsibility (including which companies, network focus, specific location).
- The recruitment of SMEs was made primarily through personal contacts – calling the SME management, mailing out information, setting up personal meetings etc. This also means that it was a quite resource demanding task.
- As support for the recruitment, the SEA provided a recruitment guide, training occasions (coordinator workshops), target group analysis, and information material describing the project´s unique selling points and – not the least – lists of eligible SMEs. Benefits of working with energy efficiency were an important aspect of these unique selling points.
- There were no direct financial incentives and no legal or regulatory requirements for the SMEs to participate. Indirectly, though, economic motivation was an important part of the activation strategy. The cost of participation was low, compared to the amount of expert advice received – in addition to potential savings from energy efficiency improvement.
- Each participating SME signed an individual commitment to the participation, after successful recruitment.

Motivation and activation of SMEs in the network:

- The continuous motivation of SMEs has been in focus for the coordinator group throughout the project. Workshops have been arranged on networking methodology, motivation strategies, how to set-up "learning" meetings etc, and a continuous discussion and exchange of experience within the group.
- Network meetings with the SMEs have focused not only on technical aspects - such as energy efficiency measures, auditing, monitoring etc – but also on multiple benefits, the importance of leadership, behaviour aspects and engaging employees, energy management etc. Also for these meetings, the importance of facilitating exchange of experience, an open discussion (also in other areas than direct energy efficiency measures) and creation of a sense of community has been emphasized.
- The coordinators have had the main responsibility to foster continued motivation through their planning and implementation of network meetings and direct SME contacts. However, the access to expertise has also been an important factor.
- Some examples of positive factors for keeping motivation has been identified through the continuous monitoring:
    - Network meetings at fellow companies, regular network updates and the development of network community.
    - The actual implementation of an energy audit, making the energy efficiency potential concrete.
    - Contact with and advice from the energy expert.
    - The possibility to apply for additional financial support for carrying out or investigating further specific measures – and the support given within the network for such applications.
- Finally, the setting of concrete targets for the EENet initiative as a whole and for each specific network, together with systematic monitoring and continuous evaluation of results, have spurred motivation. Monitoring results have been fed back from the SEA to coordinators and to networks, and these have been discussed and compared at all levels.

Set-up of the energy efficiency support initiative – Enabling

SMEs are enabled through the network meetings, by the visit and support of the energy expert and through taking part in the energy audit and in the monitoring activities of the initiative. The coordinators are enabled through regular coordinator meetings containing both training and workshop elements. Further, the inclusion of energy experts and ambassadors within the project ensures a continuous development of capabilities. A wide range of supporting material has also been developed within the initiative. Easy access to the material and to expertise, together with opportunities to discuss the content and exchange experience from using it has contributed to building the capability of coordinators.

Set-up of the energy efficiency support initiative – Embedding

The development of EENet networks were not embedded in the SMEs regular company networks, since they were initiated as new network constellations. However,

there are a couple of examples of networks that has been possible to link to other familiar contexts for the SMEs. The most obvious example is a couple of grocery store EENet networks, in which all companies belong to the same chain. Here, the organization and energy management of the store chain has contributed to the networks and acted as a complementary trusted partner within the networks.

There is also an element of embedment on the coordinator side, since these are linked to regional actors in energy efficiency and can act as a connection to other activities, support systems and actors. Finally, the regional connection ensures some kind of embedment also on the SME side, since the identification as regional actors is in many cases substantial for these companies.

Successful outcome and shortcomings

The results from the EENet initiative has been reported in a final report for the period 2015-2018. A specific report mirroring the companies' perspective, based on qualitative monitoring for the same period. In addition, the annual monitoring of quantitative results up until 2019 has also been reported. Final result reports for the entire initiative (running until the end of 2020), will be available during 2021.

The targets for the EENet in terms of participating companies, established networks, and participating individuals at SMEs have been met. The number of energy audits carried out as a result of the initiative was surpassed the target strongly, in that basically all participating SMEs made an energy audit.

The initiative has also been shown to contribute to:

- Non-energy benefits at the companies, including improved working environment, increased employer engagement, improved product quality, positive effects on the company trademark and spin-offs in terms of established business collaboration between companies.
- Increasing the SME capabilities in relation to energy efficiency and in their role in commissioning energy audits or other energy services (customer competence).
- Increased regional collaboration and increased energy efficiency capabilities for all actors involved.

The overall quantitative targets for the initiative were 40 implemented energy efficiency measures per network (divided between technical and energy management measures), 15% more efficient energy use and 25% decrease in carbon dioxide emissions and fossil fuel use. These targets were thus related to the activity of the SME, and describe the development of specific energy use and emissions.

At the end of 2019 on average 33 measures per network were implemented, the majority of which were technical measures. The most frequent measures were taken in the areas of cooling, lighting and ventilation, while the types of measures leading to the largest energy savings were in the areas of heating, ventilation and cooling

(and “other” measures). In total, an energy efficiency improvement of 11 % had been achieved and specific carbon dioxide emissions were reduced by 14%. Although, in total, the energy efficiency target was not yet met, 13 networks had surpassed 15% energy efficiency improvement and five networks had reached improvements above 20%. Examples of networks that performed very well include the grocery store networks and some networks in which companies have developed the overall production with modernization and efficiency improvements as a result.

Within the initiative, a total of 43 networks with (in total) 386 SMEs were initially set up. However, at the end of 2018 only 36 networks with 282 companies were still active. The 2019 evaluation of quantitative results was based on 34 networks and 243 companies (which had delivered monitoring data through the EENet monitoring tool). Consequently, there has been a significant drop-out rate within the initiative. The reasons and motivation of companies that chose to withdraw from the initiative has not been thoroughly evaluated. (Nyström & Bokinge, 2019)

One specific challenge within the initiative was the recruitment of companies. Although, successful and largely reaching the goals in the end, it was required far more resources than initially expected. Firstly, it was difficult to identify which companies that fulfilled the criteria, then to reach a relevant contact person in the company and then to persuade them to prioritize energy aspects and actually activate the participation. As a result, the SEA lowered the criteria for annual energy use from 2000 MWh to 1000 MWh. Not enough participating companies was also one of the reasons behind that some regional networks were closed down early on.

5.5.2 Coaches for Energy and Climate (CEK)

Overview and scope

Coaches for Energy and Climate (CEK) is a Swedish, national initiative, specifically targeted towards SMEs with an annual energy consumption below 300 MWh. The CEK project combines coaching and knowledge transfer between participating companies. This aims at providing the companies with valuable tools to improve their energy efficiency. The project targets SMEs with a low energy consumption, since they are not eligible for any other support and since there is a lack of actors providing energy services for this type of companies (who often do not have own competence and resources to work with energy issues). The CEK project has a clear capacity building aim, where one goal is to establish collaboration between energy and business competences at the local level, to strengthen the abilities to coach SMEs towards competitive energy efficiency solutions.

The coaches are available in 130 Swedish municipalities, which allows for a local embedment and coaching. The participation in the programme is free of charge for the companies and funded by the Swedish Energy Agency through the European Regional Development Fund. There is one coach in each participating municipality (or

group of collaborating municipalities). The coaches help the companies get a better understanding of their energy use and propose energy efficiency measures. The coaches are also available for support on how to implement the measures.

During the coaching program, the companies are invited to regular meetings with other companies participating in the same local program, where they can exchange experiences and learn more about energy efficiency. Topics of the network meetings are decided based on the interests of the participating companies, but may include, e.g., profitability of energy efficiency measures, investment decision-making, financing solutions, green lease agreements, or measurement & monitoring of energy consumption. Approximately 20 companies participate in each local program, and each coach runs two such programs.

The CEK initiative also includes a competence development programme for the coaches. This aims to increase the coaches' opportunities to successfully implement the five stages of the coaching program. The training and development of educational material was organized by the Swedish Energy Agency and including, amongst other: target group analysis, unique selling points for participation of SMEs in the program, basic energy knowledge, basic energy auditing adapted to the target group, common energy efficiency measures, how to proceed with implementation of energy efficiency measures including cost and profitability assessment.

Set-up of the energy efficiency support initiative - Actors

- **SMEs**: Any type of SMEs with energy usage below 300 MWh/year. Coaches are encouraged to identify similar types of SMEs for participation in the local programs in order to enhance the opportunities for exchange of experiences, but this is not a requirement.
- **Coaches**: The coach could be seen as a *trusted partner* supporting the companies (free of charge) in their energy efficiency work. The coaches serve as the link between the overall CEK project (through the Swedish Energy Agency) and the SMEs, and can be an impartial actor towards commercial energy service providers. With its base in the municipality, and support from the Swedish Energy Agency, they are normally seen as a credible partner. However, the coaches generally have no previous relationship with the companies before the start of the programme and consequently need to work to establish the trust between the partners. To some extent, the coach can be seen as an *energy service provider,* acting as a provider of basic, simplified energy audits and energy advise.
- **The Swedish Energy Agency**: Serves the purpose of a *multiplier organization*, by providing the competence development programme for the coaches, and by project follow-up and evaluation. The Swedish Energy Agency provides a link and communication channel between the coaches.
- **Other**: Municipalities receive funding from the project to employ the coaches.

Set-up of the energy efficiency support initiative - Organizing
The SMEs are organized in local programs consisting of 20 companies. Each programme is led by a coach. The coaches are funded through the Swedish Energy Agency, which also provides competence development, a collaboration platform for the coaches, and project follow up. The local coaching programs can be seen as a (very) simplified energy efficiency network. Typically, the SMEs were not collaborating before they entered the CEK program. The SMEs were geographically close – within the same municipality.

Set-up of the energy efficiency support initiative - Activating
The coaches had training that included unique selling points to get SMEs to participate in the programs. Benefits of working with energy efficiency were an important aspect of these unique selling points. There were no direct financial incentives, and no legal or regulatory requirements, for SMEs to participate, but the participation was free of charge.

The coaches' training included target group analysis, and it was emphasized that activation efforts should be tailored to the type of SMEs, but the main messages and communication channels were the same for all SMEs. The programme itself, however, was targeted only towards SMEs with an energy usage below 300 MWh/year, and this was considered when the communication material and coach training was developed.

Set-up of the energy efficiency support initiative - Enabling
The coaches were enabled to perform their tasks through their obligation to participate in a competence development program. Material and training for this was developed within the project. The training was developed specifically with the low energy use of the SMEs in mind. This was assumed to call for other activating approaches compared to for more energy-intensive SMEs and also due to a lower ambition level, e.g., for energy auditing. The training also considered that the coaches might not have any previous experience from working with energy efficiency.

The SMEs were enabled to start working with energy efficiency through the coaching program. The coaches support the SMEs by conducting a simplified overview of their energy use, and guiding them to identify energy management and energy efficiency measures. No new material or tools targeted directly towards the SMEs were developed within the project. Instead the coaches were trained to find and utilize existing guidebooks and tools appropriate for the targeted companies in each coaching program.

Set-up of the energy efficiency support initiative - Embedding
The initiative is embedded in the local environment through the coaches' employment at the municipality level. However, typically, the SMEs were not collaborating before entering the coaching program. Whether the initiative has resulted in adequate

embedment of energy efficiency as part of the SMEs work remains to be evaluated when the project finish.

Successful outcome and shortcomings
The project has not been finished. It is monitored for follow-up and evaluation, but the evaluation is not yet available. However, the project so far has shown to provide valuable lessons and insights for the coaches through their embedment in the local and regional environment of the companies, that hopefully can be used for scaling up the experience from the project.

One difficulty from the beginning was the lack of experience for some coaches. It was also challenging to recruit SMEs to the programs in some smaller municipalities, simply because these municipalities did not have a large enough number of SMEs that were suited for participation in the programme (big enough energy consumers to make energy efficiency worthwhile, while still having an annual energy use below 300 MWh). Furthermore, a lot of time and engagement has been necessary in the personal contact for marketing the energy efficiency concept to an audience that is driven by other interests.

Another shortcoming is the limited impact of the project in terms of actual energy savings. The project's objective that 80% of the companies should reduce their energy use by at least 10%, would not result in a very significant energy saving in absolute numbers considering the low energy consumption of the companies.

5.5.3 Incentives for Energy Efficiency

Overview and scope
Incentives for Energy Efficiency is a Swedish, national initiative for energy efficiency support to companies covered by environmental regulation. In Sweden, regulations for environmentally hazardous activities are covered by the Swedish Environmental Code. The Environmental Code has a broad scope, covering the majority of all Swedish environmentally relevant law. Of special relevance in the GEAR@SME context is that it includes paragraphs requiring companies to work systematically with housekeeping of energy and resources. Environmental inspection and enforcement of the code regulations are highly decentralized and is planned and carried out at regional and local level. Personnel at the inspection and enforcement authorities spend a large part of their working time on inspection activities at the controlled installations, which means they regularly meet companies and have the ability to build up trust. Any company with a significant energy use is likely to be in contact with the regional or local authorities for environmental inspection. This opens an opportunity to use this established structure, and the existing relationships, as a channel for support also on energy efficiency. This saves time since it does not require any additional meetings with the companies, which means more companies can be reached. However, before the project started, the environmental inspection activities rarely had energy

housekeeping issues on the agenda and there was a lack of energy efficiency competence with the authorities. The project "Incentives for Energy Efficiency" aimed at building capacity at the regional and local authorities for supporting SMEs in their work with energy efficiency. This is accomplished by first developing a consistent set of tools to be used as a resource for the authorities in the communication and support of SMEs.

Within the first phase of the project a range of methods, tools, educational and communication material on energy efficiency has been developed, with the purpose to serve as a resource for personnel at inspection authorities in their contacts with SMEs. This material was developed mainly by a few of the regional authorities. In the next phase of the project, the developed material has been communicated and disseminated through seminars with the rest of the regional and local authorities in order to build competence and capacity in energy efficiency. Currently, environmental inspectors have just started using their new competences and tools to help and support SMEs. The project will be finalized and evaluated in 2021. The goal is to reach 1500 SMEs in the country.

The material developed within the project falls into four different areas:

- Systematic and structured energy work: Guide for companies on how to work systematically with energy efficiency. Including a tool for self-assessment to know at what level to enter the guide.
- Sector guidance for best available technology: Support on legal requirements for energy-efficient technology (based on EU BREF documents) and proposals for energy efficiency measures. Available for support processes, surface treatment, and foundries.
- Action plans for implementation of energy efficiency measures: Guide for companies on how to take the next steps after an energy audit to develop a useful action plan for implementation of identified energy efficiency measures. Including tool for life cycle cost calculations and templates for the action plan.
- Inspirational movies for energy efficiency: Good examples on energy efficiency for cafés and shops, food manufacturing, foundries, surface treatment, and also general measures.

The Swedish Energy Agency has a funding and coordinating role in the project. They act as an expert resource, and provide channels for distributing and communicating the results and methods from the project to a wider audience, e.g. to make it available also for SMEs in general. The developed methods, tools, guides and inspirational movies are available for anyone (in Swedish) at the webpage of the Swedish Energy Agency (Energimyndigheten, 2020).

The project was set-up as a time-limited project where regional authorities (the County administrative boards, "Länsstyrelser" in Swedish), who are responsible for inspection and supervision of activities regulated by the Swedish Environmental Code, received

funding from the National regional fund programme (financed by the European Regional Development Fund) through the Swedish Energy Agency. The initiative was targeted solely towards SMEs which falls under the scope of environmental inspection and enforcement according to Swedish Environmental Code regulations.

Set-up of the energy efficiency support initiative – Actors

- **SMEs:** Any type of SMEs subject to environmental inspection can be reached by the project.
- **County administrative boards:** These are the authorities performing environmental inspection and enforcement at the regional level. Some of the regional authorities were directly involved in the development of methods, tools, and material within the project, and also the dissemination of these to the rest of the regional and local authorities. In terms of GEAR@SME terminology, the officials at the County administrative boards (the inspectors) act in some way as a *trusted partner* towards the SMEs. They are not really neutral, due to their inspection and enforcement role (they can actually force the companies to implement certain energy efficiency actions), but they are a credible actor, which may have an established relationship (and trust to some extent) with the SMEs. They are also impartial towards, e.g., other commercial actors such as competitors and energy service providers. On the other hand, the project does not include any kind of collective approach, so there is no role for a *trusted partner* as a coordinator between different companies. The County administrative boards also have an important role as a *multiplier organization*, with the exchange of experience and capacity building within all regional and local authorities for environmental inspection.
- **The Swedish Energy Agency**: The SEA is responsible for overall project management and coordination. It also has an important role in dissemination of results from the project, and as such acts as a *multiplier organization*.
- **Other**: Local municipalities are responsible for environmental inspection at some SMEs with minor environmental activities. Consequently, they have a role similar to the regional authorities towards the SMEs, and thereby act in some ways as a *trusted partner*.

Set-up of the energy efficiency support initiative – Organizing

See the above description of the actors. Note that this initiative does not involve any collaborative action between the SMEs. Instead, the capacity building takes place at the authorities' level, and the resulting potential to efficiently reach many SMEs is the interesting aspect of this initiative in a GEAR@SME context.

Set-up of the energy efficiency support initiative – Activating

SMEs do not choose to participate or not but are reached through mandatory inspection visits from the authorities, who may also require the SMEs to take certain actions in their energy efficiency work. However, the set of tools developed within the project includes many elements on how to activate the companies to willingly engage in such actions. For example, the guidance for action plans on energy efficiency

emphasized non-energy benefits as an important factor in the decision about which measures to include in the implementation list. One of the four focus areas for the method development was the inspirational movies with good examples. The inspectors are also trained in motivating the companies.

Set-up of the energy efficiency support initiative – Enabling
The project has developed a wide range of tools and a guidebook targeted mainly towards the SMEs, which will enable them to work systematically with energy efficiency, find energy efficiency measures, and set up better implementation plans. The personnel at the authorities were enabled to communicate this material through a series of training seminars targeted for this specific task.

Set-up of the energy efficiency support initiative – Embedding
The initiative is very well embedded in existing structures and takes advantage of existing organizations and communication channels. The main aim of the project has been to embed the capacity building and competence development within working structures.

Successful outcome and shortcomings
The project has not been finalized. It will be evaluated during 2021. One expected success factor is the embedment in established organizations, which gives an opportunity to reach a majority of the most relevant SMEs – the ones with a significant energy use. Shortcomings may – or may not – be related to the fact that there is no direct involvement of energy service providers in the project. Consequently, the project does not directly contribute to bridging potential gaps between the supply and demand side for energy services. Further, the level of trust, from the side of SMEs, towards the environmental inspectors may vary widely based on earlier experience. Hence, the embedment may in certain situations also be a drawback.

6 Important factors for closing the demand-supply gap in partner countries

This chapter provides information on important factors for bridging/closing the demand-supply gap for energy efficiency in SMEs. Experience based information from the initiatives described in previous chapter as well as in general has been the source for the material below. Main barriers and drivers are identified and in focus in respective country.

The starting point of the GEAR@SME project is that there is a potential for SMEs to become more energy efficient, but that there is a gap between SMEs and suppliers of energy services that form an important obstacle for reaching this potential. The current way in which SMEs are approached by auditors and other energy service suppliers has insufficient effect. It is therefore important to bridge this gap between the demand and supply side to boost the uptake of energy efficiency measures that are desirable from a societal perspective.

Within the project, based on literature and earlier experience, a structured methodology will be applied to address this issue. However, in order to define and further develop the planned approach, a deeper understanding of the nature of this gap in the respective partner countries is important. Below, the reasons for the demand-supply gap, and potential measures that could help bridging this gap is described for the four countries – Germany, Italy, the Netherlands, Romania – in which the GEAR methodology will initially be applied, as well as for Sweden. The descriptions are based on the perspective of the project partners in the respective country (see questionnaires in Appendices A and B), and include conclusions drawn from the examples provided above. These organizations have all extensive expertise and experience within the area.

6.1 Germany

6.1.1 Problem description – reasons for the gap and strongest barriers to overcome

In general, SMEs have limited human resources and their core business has little or no relation to energy efficiency. Therefore, most SMEs do not have energy efficiency on their agenda, unless they have high energy costs, or there is a driver within the SME who has a personal motivation to push the issue energy efficiency. Thus, the providers of energy services are often proposing solutions for problems the SMEs either do actually not (because energy costs are not very high) have or are not aware of.

Furthermore, a distinction must be made between energy consumption that is related to production processes and energy consumption caused by infrastructure and buildings. This complex starting point makes the work of the energy consultant difficult - often he or she does not have the detailed knowledge of the production process, so that the advice cannot be comprehensive and the results are disappointing for the company, as only energy consumption outside the production process is being focused on.

For a smaller company, such as an SME, the added value from an energy consultancy is often not in proportion to the financial and personnel expenditure for the company. SMEs very often expect a return-on-investment within 2 years, and a large part of energy efficiency measures will not provide this. Therefore, most energy efficiency measures are not obviously economically attractive to the SMEs when the cost of an energy audit is taken into account. In total, they would have to invest more than they perceive that they get out of it (…in 2 years' time). A second barrier is financing of the actual implementation of energy efficiency measures and (at least in the perception of the SME) too high administrative barriers linked to financial support systems.

6.1.2 Leverage points and solutions for bridging the demand-supply gap

Considering the points named above, SMEs need to have a simple and low-cost possibilities to establish if it makes sense for them to act on their energy consumption. If the efforts necessary to identify energy efficiency measures could be reduced - e.g. by tools offering very inexpensive data collection and simple data availability (without personnel costs) - a very important step would be taken.

Furthermore, cost-effective advice, and simple, effective proposals for measures will motivate SMEs to act. At the same time, energy service suppliers also need to understand the perspective of the SMEs: If energy costs are low or the measures demand a big investment, then SMEs do not have an economic reason to put resources into reducing energy costs and implement measures.

Advisory services could be offered through the chambers and cooperatives and could be communicated in an uncomplicated way. It would make sense to assign energy advisors to certain business sectors, in order to ensure that the advice given is tailored to the needs of the individual company. Therefore, it is essential that energy consultants first understand which tasks the SME has to fulfil in everyday work, what is produced or processed how and when. The consultant needs to understand the perspective and motivation of the SMEs. Also, they need to understand the motivation and constraints of the management employees, as this is the basis on which the consultancy should be designed and carried out.

The recommended energy saving measures should then be based on the capacity of the company. Both personnel and financial capacity should be taken into account. In

addition to pure replacement procurement (such as energy-saving lighting, energy-saving pumps, etc.), the focus should also be on systems and equipment operation. Often no information is given about the long-term need for advice.

Financial support schemes must be more readily available. Measures that are not economically viable without financial support need a simple support system that allows financial assistance without unnecessary administrative barriers. Furthermore, it would support the SME if the external energy consultant also took care of ensuring these funds. This is the only way to ensure that financial support for energy saving and efficiency are handled quickly and correctly for all parties.

In addition, collective orders could help SMEs in particular to purchase energy-saving equipment at low cost. Chambers or purchasing cooperatives could also play an important role here.

Another important point is to promote the standardisation of content and advice where it makes sense, while at the same time allowing tailor-fit approaches where necessary. In Germany, mandatory energy audits for non-SMEs have been introduced since 2015. However, to date, there is no uniform structural specification for energy reports and no template available online. This would be very useful for advising the company, the consultant and the controlling body, and especially give the company the feeling that they are supported in their efforts. Standards would help to build assessments and statements on the same assumptions, to unify economic considerations and to create security and effectiveness as well as efficiency. If such supportive material was developed, this could provide a basis for simplified versions adapted for SMEs.

6.2 Italy

For Italy, the information below is based on input from CertiMac (Sections 6.2.1 - 6.2.2) and CNA Ravenna (Section 6.2.3).

6.2.1 Problem description - reasons for the gap and strongest barriers to overcome

The gap between SMEs (demand side) and providers of energy services (supply side) is mainly due to the fact that energy is an aspect considered to be “external” to the company’s core business. As a result, SMEs often think that their energy use does not deserve to dedicate time and efforts to.

For small and micro-sized enterprises it is very difficult to have enough resources allocated to the efficient management of energy. Often, there is also a lack of the necessary “cultural knowledge”, i.e., a lack of technical knowledge about energy flow management and lack of shared knowledge, e.g., between the different departments/area of the company value chain, or about the economic and

environmental value of energy efficiency. This is mainly due to the commonly limited weight of energy costs compared to the overall production costs of an SME.

As a result, SMEs often consider the energy costs to be inevitable and impossible to avoid.

In summary, the strongest barriers that need to be overcome for bridging/closing the demand-supply gap are:

- Low awareness of top management
- Slowness in bureaucratic and administrative procedures, in particular those related to have access to the diverse incentive measures
- Return on investment for energy efficiency measures are considered to be too low
- Difficulty in having access to third-party capital (e.g. bank loans)
- Low availability of own financial funds
- Reluctance in making interventions in the stable production process.

6.2.2 Leverage points and solutions for bridging the demand-supply gap

From the perspective of CertiMac, with direct and extensive experience from working with SMEs, the most important factors for overcoming the demand-supply gap are:

- spreading knowledge about:
    - the concrete effect of energy use and energy costs on the SME's overall economic performance and on the production process
    - the SME's own level of energy efficiency in comparison both to the average within its own specific sector and to its own competitors, highlighting its own potential for energy efficiency improvements and thereby cost reductions.
- easing the SME's access to and conditions for financing of energy efficiency measures

Specific actions that could be taken to address these factors are:

- Increasing the skills of entrepreneurial associations and their capacity to contribute in delivering information and training to the SMEs,
- Availability and access of benchmark data on sectoral energy consumption,
- Conduction of energy audits in SMEs,
- Installation of monitoring systems of energy consumption within the production process,
- Access to third party capital, e.g. by developing crowdfunding for providing energy efficiency loans
- Green branding of the SMEs products and services, which could provide additional incentive for the company,
- Increase the availability of incentives for SME's to improve their energy efficiency, e.g. via policy and regulatory measures, providing easy access to public funding,

- Training and information of SMEs about energy and energy management aspects.

In addition to the suggestions above, the demand-supply gap could also be bridged by proactive measures of entrepreneurial umbrella associations. An interesting possibility would, for instance, be that member SMEs had access to “external support services” that are financed by the entrepreneurial umbrella associations through the association fees.

6.2.3 Barriers and leverage points from the perspective of CNA Ravenna

From the perspective of CNA Ravenna, the linkages between energy efficiency in SMEs on the one hand and ensuring energy security and reaching targets for renewable energy use in specific countries (such as Italy) are important. Historically, Italy has had a strong dependence on energy imports from other countries. However, recent years have seen a significant increase in consumption met by renewable (domestic) energy sources.

This was made possible by a national campaign to achieve the 2020 target on renewables. The incentive for supporting renewable energy was financed through the electricity bill, which meant a significant impact on the cost of energy, especially to small businesses which are still the largest contributors to this system today.

To achieve the 2030 objectives on renewables, it is necessary to guide investments, stimulate the various market players, and identify the most coherent and effective measures for each market. Furthermore, the market still requires support interventions to stimulate investments, at least for small-scale installations, which are known to have higher installation costs. In this, there is a need for instruments oriented specifically towards SMEs. The support of small companies could be important for strengthening self-production to increase the penetration of renewables in the national energy mix. In this regard, it should be remembered that small businesses already have a tendency to resort to self-production of energy in order to reduce bill costs. This could be further supported by appropriate tools capable of supporting small businesses at least in the start-up of investments.

However, an alternative to self-production in order for SMEs to reduce their energy costs is to improve their energy efficiency and thereby reduce the demand for purchasing energy. Significant reductions in energy use will also make it easier to reach renewable energy targets. Consequently, there is a tight linkage between renewable energy policy (affecting energy costs) and energy efficiency, which could provide important leverage to potential demand-supply side collaboration.

6.3 Netherlands

For the Netherlands, the information below is based on input from TNO (Sections 6.3.1-6.3.2) and CLOK (Section 6.3.3).

6.3.1 Problem description - reasons for the gap and strongest barriers to overcome

How can business parks be helped to make their energy management collectively sustainable? In 2018, the Netherlands Enterprise Agency (RVO.nl), together with the CLOK Foundation, investigated what park management organizations need for a successful collective approach (RVO, 2019). Over 100 firms responded, representing a mixture of large, medium-sized and small enterprises. A notable difference between large firms and SMEs is that the latter relatively often indicate that they do nothing at all to become more sustainable. They do consider it an important subject, but do not want to release money for it. In addition, lack of time, knowledge, support and cooperation are often cited as reasons. SMEs indicate much more often than large firms a need for a support arrangement, in agreement with local authorities (65% versus 27%).

The Sustainable Business Parks covenant (BE+, 2019), which was initiated by the BE+ initiative and aims to promote effective collective approaches to business parks as a means to accelerate energy transition, the following issues need to be addressed if this goal is to be achieved:

- The lack of energy consumption data. It is already a challenge to obtain these for the business park as a whole, let alone for individual companies. Of course this information is partly sensitive to competition, but the data are needed to make sensible plans for energy management of the site that can also be monitored for effects.
- Developing a joint integrated approach combining the "stick" (i.e., mandatory measures) with the "carrot": attractive forms of financing for measures.
- Monitoring the results There is a growing need for this.
- Investors for collective financing; to arrive at a healthy business case with an ESCO it is important that financiers join it
- Bottlenecks in the electricity network; there are already several concrete examples in which entrepreneurs want to expand their connection, but the network operator does not allow this. This is due to bottlenecks in the electricity network, sometimes at a low voltage level (local), sometimes at medium voltage level (regional). In these cases, entrepreneurs cannot connect their solar PV panels to the grid. Solutions are sometimes years away, which is unacceptable.
- Development of heat networks with a good business case; One company produces residual heat on an industrial estate, while another company needs heat; for the exchange of that heat in an efficient and business-like manner, models and instruments are needed.

6.3.2 Leverage points and solutions for bridging the demand-supply gap

In the investigation by RVO, cited above (RVO, 2019), park management organizations were also asked what would be needed to improve collective energy management. The companies mentioned then the following issues that should be addressed:

- Clear agreements on how the activities are funded
- Clear appointments with municipality and/or province about the support offered
- Knowledge about funding options for taking energy saving measures
- Clear division of roles, tasks, and responsibilities among the parties involved
- Mandatory energy scan
- Quantified ambition specified
- Entrepreneurial foundation should set a goal
- Agreement with authorities on how to handle “laggards”
- Minimum requirements to companies regarding effort or result
- Other.

These issues resonate with the lessons learned in the initiatives mentioned in this document. Successful initiatives address all of these points.
Target group segmentation of SMEs already happens in some initiatives, but could be extended further. The research firm Motivation has found five segments of SMEs with different motivations. Reports like these can be used by trusted partners to refine their insight in what drives the target group, and how they can be motivated(Berends & Mulder, 2016). Another segmentation can be found in a 2015 study into drivers and barriers for SMEs to take energy measures (Mulder et al., 2016).

Likewise, the Sustainable Business Parks covenant(BE+, 2019), has also identified promising activities to address the barriers described above. In their program, the covenant petitions for the following support for local organisations:

1: Activate organizational capacity
The degree of organization in a business park is often the crucial success factor for exploiting the potential on business parks. Many companies primarily focus on their own production process. As a result, they often find it less easy to link up with collective energy transition projects. At the same time, you can expect entrepreneurs to co-invest in maintenance, management, enforcement, sustainability and park management structure. But this does not come about by itself. The government can act as a driver and create fertile soil for investment. This requires people who work with entrepreneurs and business associations in the region to stimulate them to unite SMEs to become collectively sustainable.

In practice, there are major differences between business parks. In some locations, entrepreneurs have already united. There is an active and ambitious business association or park management present. In other areas there is no association of undertakings or there is insufficient support from companies. The realization of

organizational strength in local initiatives is therefore an essential step in shaping sustainability. Capacity is needed to encourage companies to unite and to help business associations to become active and set up park management. Spatial Development Companies (ROMs) and Environmental Agencies play an important role in this. Entrepreneurs and local business associations should be actively approached by these organisations to activate them using examples from practice to show what is possible and what collective sustainability will yield for the business park itself.

2: Support for collective organization
Sustainability does not start automatically by organizing collectivity. Companies have many questions and need guidance in making plans. Where are savings options and what opportunities are there to generate sustainable energy? Which measures pay off in the short term and which have a longer payback period? What is the low-hanging fruit and where is the next step? More insight and a step-by-step plan or roadmap help those corporate collectives to make their work location energy neutral. Business associations need support to set up this process. In most cases they lack the capacity, knowledge and resources to implement this. This requires a joint contribution from the entrepreneurs on the business park and the relevant authorities. Subsidies should be available from regional of local governments to provide the capacity to local business associations to perform these tasks.

3: Financial support for the realization of measures
The risk-bearing upfront investments required for sustainable measures deter many entrepreneurs. More collectivity already helps to remove that barrier. After all, unity provides economies of scale and shortens the payback period for sustainable investments. And volume is a prerequisite for attracting external financing. In this phase, companies need support in applying for funding at an individual or collective level. This could include financing by banks and regional development companies. But there are also subsidy schemes from the national government and the provinces that can help to finalize business cases and to remove the unprofitable top of investments.

6.3.3 Barriers and leverage points from the perspective of CLOK

The gap that exists between the SMEs and the energy service suppliers depends on a number of factors, primarily:

1. The commercial approach, of the energy service provider which may make impact trust from the SME and the advice given by the suppliers.
2. The focus on their own solution instead of focusing on integrated solutions, taking all aspects of the SME's situation into account.
3. The fact that the energy service supplier often misses indicating the urgency of the problem and how it impacts the SME organization.

A suitable solution to help bridging this gap is that there are more opportunities for people within the SME's and at energy service suppliers to encounter. In addition, it is important to realize for suppliers and other actors involved, that the energy transition is only one thing that entrepreneurs are currently working on, in addition to all other challenges of their day-to-day business.

Other crucial aspects for bridging the gap include for example:

- Creating knowledge points
- Helping in an objective and independent way
- Leading the way to financing and subsidy.

6.4 Romania

6.4.1 Problem description – reasons for the gap and strongest barriers to overcome

There are several barriers which contribute to the gap between SMEs and energy services, such as legislative barriers in form of legislative framework, as the SMEs are not obliged to assign an energy manager or to carry out energy audits. In Romania, there is, however, a legal framework on voluntary appointment of energy manager. At the institutional level, there is a lack of standards and energy labeling and deficiencies in laws and regulations for energy efficiency. Further, there is a lack of knowledge within the energy service sector at the technical level, as the regulation and verification of the quality of the energy audits is missing from the legislative framework.

At the financial level, there is lack of financial and fiscal facilities for investments in energy economy and also sometimes the application is consisting of strict eligibility criteria which hinder SMEs to apply.

One of the main barriers has been identified to lie within the communication category, as both SMEs and other actors are lacking in knowledge and understanding of the technical language. This is one of the main barriers which should be bridged by different measures, that can contribute to developing good communication and engagement (for instance through the methodology which will be developed and tested in the GEAR@SME project).

6.4.2 Leverage points and solutions for bridging the demand-supply gap

Relevant stakeholders and different communication channels are the key aspects in bridging the gap between demand and supply side. Also, good practices need to be highlighted in order to empower the mindset to learn from others, learn from mistakes

of others and do it in a collective way. One of the main messages should be, that SMEs are not alone and they have plenty of support around to be energy efficient. Trust should be built and validated throughout the development of contacts with the SMEs, for instance within the project activities. There is a significant gap regarding trust between SMEs and energy service suppliers, including the implementation of energy efficiency measures and renewable energy sources.

6.5 Sweden

6.5.1 Problem description – reasons for the gap and strongest barriers to overcome

In literature, there are extensive analyses of the so called "energy efficiency gap" – the gap between the apparently cost-efficient potential for energy efficiency improvements, and the actually implemented energy efficiency measures that can be observed throughout society – and the barriers that contribute to explaining this gap. These barriers are often classified and described as (Thollander & Palm, 2013):

- Market failures/imperfection, including e.g. imperfect information and adverse selection
- Nonmarket failures/imperfection, including e.g. hidden costs and lack of access to capital,
- Behavioral barriers, including e.g. credibility and trust, values and inertia, and
- Organization barriers, including e.g. lack of clear responsibilities between energy managers and company owners.

In Sweden, the specific gap between the demand (SMEs) and energy service supply sides have not, to our knowledge, been extensively discussed or studied. However, based on the experience from the support initiatives above, and overall work with energy efficiency in industry, we think that this gap can and should be explained in terms of the well-studied general efficiency barriers.

The main reasons for the demand-supply gap can then be summarized in that the energy service suppliers do not always have the capabilities, tools and organizational approach necessary to overcome these barriers. Not all barriers could be overcome by an effective SME – energy service supplier interaction, but especially the following are relevant for this gap:

- Imperfect information and adverse selection – which means that the SME has insufficient knowledge about the potential, benefits and applicability of energy efficiency measures and that the knowledge "balance" between the energy service supplier (seller) and SME (buyer) hinders the choice of energy efficient actions.
    - The supply side thus may not have the time, capability (in transferring their own knowledge – or simply, in understanding the relevance of their services for the SMEs) or interest (since a more energy efficient solution does not impact their own economic/other interest) to inform the SMEs

    - The SMEs may have insufficient "customer competence" or basic competence level to ask for or understand information
- The form of information, to increase the acceptance of information it should be specific, vivid, simple and personal – not all energy service providers may have the communication resources to be able to provide information in the right form.
- The credibility and trust between supplier and SMEs – the source of information must be considered credible and trustworthy
    - The energy service provider – being the seller of a service or technology – may not be seen as (or be) a neutral source of information, for the SMEs
- Heterogenity, a measure may be cost-effective in most locations and companies but not in others
    - The energy service providers – lacking information about the specific situation of the SMEs (e.g. level of energy management maturity, type of production processes and technologies currently in use, infrastructure and logistics, existing business contracts, etc) – may not be interested in or able to acknowledge that there are differences in the applicability and relevance of their energy services.
- Bounded rationality – which we here choose to interpret in terms of a too narrow view on the potential and impact of energy efficiency measures – from both the demand and supply side
    - By taking a wider approach, positive side effects and non-energy benefits of energy efficiency can be identified at an early stage and thereby help motivating a systematic and structured work with energy efficiency as well as reducing the costs and thereby the barrier to actually implement specific energy efficiency measures.

Another important observation is that the development of systematic and structured energy efficiency work in any organisation is a continuous and long-term process. By going through multiple iterations in a loop of continuous improvement (plan-do-check-adjust), an SME (or other organization) can develop from one step to the next in the development from basic energy awareness to having a structured energy management organisation (see Figure 9, on next page).

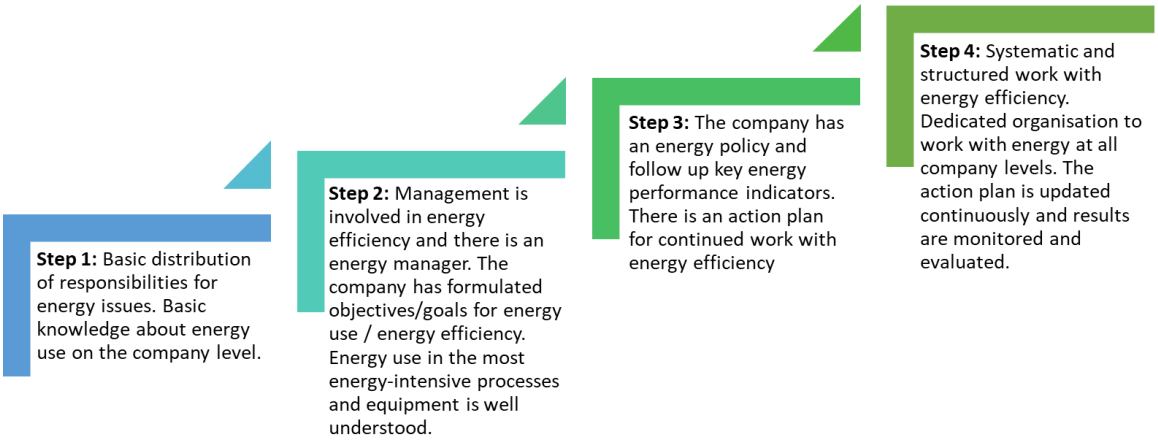


Figure 9 Step-wise development of a systematic and structured energy efficiency work in companies.

The energy service providers are generally not a partner to the SME throughout this process, which gives them an "information gap". They do not have enough knowledge about at which stage the SME is, what type of support and service the SME needs (if they need an audit, more detailed analysis of specific measures, improved measurements or help with finding financial solutions) or how the service can be communicated to be understood by the SME.

6.5.2 Leverage points and solutions for bridging the demand-supply gap

Crucial aspects for bridging this demand-supply gap can therefore be found in the set-up of various energy network initiatives, and can contribute to explaining why such initiatives have proven successful. Especially:

- Increasing the knowledge level of the SMEs through network meetings, including both educational elements and exchange of practical experience between participating SMEs. Network meetings are an important element of both the EENet initative and the Coaches for Energy and Climate programmes.
- Delivering this knowledge through partners that are considered trustworthy, knowledgeable, and "neutral" – i.e. that they are not marketing a specific solution – by the participating SMEs. In the Swedish EENet initiative, this role is taken by the network coordinators, and in the Coaches initiative, by the actual energy coaches. In the project Incentives for Energy Efficiency, a similar role is held by the personnel at local and regional authorities that perform company visits as part of environmental inspection.
- Support building a long term relationship between the SME and energy service providers (energy experts), that both increase the knowledge level of the energy service provider about the situation of the specific SME, and the level of trust

from the SME side. This has been done in, for instance, the Swedish EENet initiative by linking specific energy experts to each of the networks.

- It is also valuable with measures that help increasing the awareness at energy service providers (offering a specific service, such as a specific energy efficient equipment) of the need for SMEs to achieve a certain maturity in their work with energy efficiency to be prepared for decisions on actions that involve investment or payment for this specific type of energy service. This means that also energy service providers might need to increase their knowledge level, especially regarding energy management practices in SMEs, and on factors that influence decisions about energy efficiency actions in SMEs.
- Embedment in existing structures might increase the possibility for a long-time engagement in such initiatives and thereby provide good conditions for continuously improving the work with energy efficiency, in difference to a one-time effort. For example, the “Incentives for Energy Efficiency” project embeds the energy support to SMEs within regular company visits as required by inspection and enforcement related to environmental law regulations.

In setting up support initiatives to provide such aspects one need, however, to be aware of the following:

- The energy service provider and the SME are normally in a seller-buyer relationship, and the initiative need to avoid interfering with the free market of energy service providers. Also, the development of a long-term relationship may cause lock-in effects for the SME.
- Building a long-term relationship and fully understanding the technical and energy management context of a specific SME takes time, which means it costs money and resources. For SMEs often also the direct cost of, for instance, an energy audit is too high and they are in general not willing or able to pay for additional time. Furthermore, these additional costs may make the energy efficiency measures less (or not) cost-efficient.
- Also from a societal perspective, the costs involved in capacity building, knowledge transfer and support measures makes it important to balance support initiatives in relation to potential energy savings. Especially, it is worth asking: How much (time, effort, money) can be spent on the very small energy users? This is, for instance, why the Swedish EENet initiative is directed only towards companies with an energy consumption above 1000 MWh/year.

On the other hand, increased knowledge (both at the demand side – about benefits and potentials for energy efficiency – and at supply side – about the situation in the SMEs) can help reveal non-energy benefits of systematic work with energy management and energy efficiency measures and thereby help identifying more cost-efficient solutions. This might help bridging the supply-demand gap both in the activating phase, and when deciding about actions (e.g. to take the cost for an energy audit, or make an investment in an energy efficiency measure).

Another way to reduce costs related to capacity building and energy efficiency work in general is to adopt a collective approach, in which costs can be shared between multiple actors. The collective approach might be relevant for several stages of systematic energy efficiency work, including activities to build knowledge and competence as well as activities related to purchase of energy services or equipment, negotiations with suppliers, or green lease contracts.

7 Tools, support channels, education and training

This chapter presents the overview of already available tools, training and education materials and support channels that could be relevant for the use cases in GEAR@SME project. The overview is intended as one of the necessary steps to set the scene for capacity building on the demand and supply of energy efficiency measures for (collective of) SMEs. It is the very starting point of one of the GEAR@SME key principles, which is to make useful tools available to (collective of) SMEs - on the interactive platform that will be developed - so that they can be directly tested and used.

The overview was carried out focusing on the collection of tools that are promising/already proven successful in earlier research projects or policy support programmes and are readily available for use in the project.

Further on during project implementation, the overview will be both widened and more deeply analyzed in the scope to identify the most promising tools that:

- Enable successful activating, organizing, enabling activities of (collectives of) SMEs,
- Have the highest potential in terms of minimal additional development effort and maximal usefulness to support the GEAR@SME methodology.

The tools thus identified will be the focus of actions of conversion, adaptation, improvement to fit into the methodology as a whole. In particular, analysis and calculation tools will be transformed in a real toolset to be used as a “path” accompanying the (collective of) SMEs through a “simplified” energy audit making them realizing the potential and benefits of undergoing energy efficiency measures and/or acquiring services within their premises. Training and educational tools will be exploited to develop country-specific training activities to fill the information gap on the demand and supply side. The objective of the training activities is to provide Trusted Partners, between SMEs and qualified energy service providers with appropriate skills and knowledge to perform their task efficiently.

7.1 Introduction to the method applied for the overview

The rationale of the search, analysis, collection activities carried out was based on the main principle of identifying the existing tools and support channels available in different European countries that can provide support to both SMEs and suppliers to cooperate on energy efficiency.

According to the crucial role of the overview activity within the whole GEAR@SME concept, a specific “collecting template” (in Excel form) was created to obtain for each tool and support channel - from the gathering activity made in each country - all the relevant information that will be necessary to proceed with the overall process described above. General guidelines and detailed instructions were given to carry out

the activity. Each tool has been "labeled" according to the Activate-Organize-Enable logic.

The "collecting template" (see Annex C) required to supply all essential qualitative and quantitative information for each tool listed. This template has been built in Excel. Excerpts from the Excel file per tool are provided in the paragraphs below.

7.2 Germany

In Germany, four tools have been collected. Three of them are Energy Audit Tools and within the logic of GEAR@SME project they are Enabling Tools. In addition, one Support Channel has been selected.

Enabling Tools

Energiebuch E-Tool / Energybook E-Tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
German	Energy Audit Tool	Self Assessment Tool	Individual SMEs	Enable
Tool Aim	It helps managers of SMEs to evaluate energy consumption data With a minimum of work, they can obtain a good overview of all relevant operating data: recording of energy costs, examination of machines and vehicle fleet, evaluation of CO_2 emissions			
Input Data	Energy consumption Energy costs Energy production Main features of SME (number of employees, heated surface, annual revenue, operating capacity) Information on the monitoring of savings measures			
Output Data	Energy key figures (consumption, costs) Specific key figures CO_2 Emissions			
Advantages	Good overview of all relevant energy data Graphical Output Data easy to understand Excel tool rich in explanations and guidance			
Disadvantages	Global energy consumption analysis only Doesn't allow energy consumption breakdown			

Energiebuch E-Tool / Energybook E-Tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
German	Energy Audit Tool	Self Assessment Tool	Individual SMEs	Enable
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor - Boardroom members involved in investment decision (CFO, CEO, CTO,…)			
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Technical persons in SMEs and Energy Auditor **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Developed within the framework of the project Mittelstandsinitiative Energiewende und Klimaschutz (national)			
Form of Availability and URL	Interactive http://www.energieeffizienz-handwerk.de/download-energiebuch Guideline: https://www.effizienznetzwerke.org/app/uploads/2017/11/IEEN_Praxis-Leitfaden_2019.pdf			

Wertsteigerung_EnKoMa-DIALOG / Added value (of energy efficiency measures)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
German	Energy Audit Tool	Monitoring Tool	Individual SMEs	Enable
Tool Aim	Profitability calculations/ comparison of energy saving measures Decision template for investment decisions Responsible persons			
Input Data	EE measure description Previous annual energy consumption in kWh and € Planned year implementation Planned energy savings (in kWh) Duration of the measure Additional operating costs Investments Energy price			

Wertsteigerung_EnKoMa-DIALOG / Added value (of energy efficiency measures)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
German	Energy Audit Tool	Monitoring Tool	Individual SMEs	Enable
	Annual interest rate Annual nominal price increases Energy revenues			
Output Data	Net present value (= contribution to company value increase)			
Advantages	More precise than the amortization period calculation Guideline given with the tool			
Disadvantages	Economic analysis only Input data (planned energy savings,...) needs to be validated by an energy advisor and integrated from another source Few "default value" or example indicated			
Beneficiary(ies)	**SMEs:** - Boardroom members involved in investment decision (CFO, CEO, CTO,…)			
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Energy Auditor - Energy Manager **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	„Initiative Energieeffizienz-Netzwerke“ (2014) (national)			
Form of Availability and URL	Interactive https://www.effizienznetzwerke.org/app/uploads/2015/06/Wertsteigerung_EnKoMa-DIALOG.xlsx https://www.effizienznetzwerke.org/app/uploads/2015/06/Wertsteigerung_EnKoMa-DIALOG.pdf			

Wirtschaftlichkeit LEG / Profitability LEG - Tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
German	Energy Audit Tool	Monitoring Tool	Individual SMEs	Enable
Tool Aim	Profitability calculations/ comparison of energy saving measures. Decision template for investment decisions Responsible persons			
Input Data	Energy demand (base, variant) Energy efficiency measure costs Energy price Annual interest rate Annual nominal price increases			
Output Data	Net present value over 30 years			
Advantages	Default values for lifetime and maintenance costs More precise than the amortisation period calculation Tool designed for a comparison of several EE-variant			
Disadvantages	Economic analysis only Input Datas data (planned energy savings,...) needs to be validated by an energy advisor and integrated from another source			
Beneficiary(ies)	**SMEs:** - Boardroom members involved in investment decision (CFO, CEO, CTO,…)			
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Energy Auditor - Energy Manager **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Ostfalia Hochschule DeltaQ			
Form of Availability and URL	Interactive https://www.delta-q.de/export/sites/default/de/downloads/wirtschaftlichkeit_leg.xls			

Support Channels

List of Energy Auditors			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
German	Support Channel	Collective Of SMEs	Enable
Brief Description of Support Channel	Provides a list of accredited auditors, who need to have certain qualifications		
Advantages	List of accredited auditors		
Disadvantages	*Not applicable*		
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - Collective investments - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Administrative Department - Technical Department		
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Administrative Department - Energy experts within the Technical Department		
Source	BAFA (government agency in charge of administrating the obligatory audits for large companies)		
URL	https://elan1.bafa.bund.de/bafa-portal/audit-suche/		

7.3 Italy

In Italy, eight tools have been collected. Three of them are Energy Audit Tool, two are Training Tools and three are Support Channels. Within the Energy Audit Tool and Training Tool there are four Enabling Tools and one Activating Tool.

Activating Tools

ENEA Efficiency 1.0				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Energy Audit Tool	Self-Assessment Tool	Individual SMEs	Activate
Tool Aim	Raise awareness on energy efficiency Suggest good practices Estimate overall energy efficiency level			
Input Data	Location Consumption and production data Answer question on: energy efficiency (energy management and monitoring systems), Energy systems (lighting, ventilation system, air conditioning system) Compressed air Process heat, process cold Renewable sources			
Output Data	The software returns IPe= electrical performance index IPRgl= global performance index overall site score that expresses the quality of the energy system already present offers advice to improve the performance of the various systems			
Advantages	It has a very attractive interface and is very intuitive It allows you to easily recognize the production processes on which intervene in order to improve energy efficiency			
Disadvantages	It does not do an economic investigation			
Beneficiary(ies)	**SMEs:** - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **TRUSTED PARTNERS:** - Technical Department			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	ES-PA project (Energia e Sostenibilità per la PA) ENEA			
Form of Availability and URL	Interactive https://www.espa.enea.it/prodotti-e-servizi/software-per-l-autovalutazione-del-grado-di-efficienza-energetica-della-pmi.html			

SME Energy Check-Up				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Energy Audit Tool	Self Assessment Tool	Individual SMEs	Enable
Tool Aim	For SME to gain insight in energy usage and efficiency measures to improve. For SMEs to find installers or consultants to assist them in taking the next steps			
Input Data	Energy usage Sector Surface area of facility Number of working hours Data about installations and systems (lighting, cooling, heating, etc etc)			
Output Data	Benchmark of energy usage with respect to sector average Balance of energy usage for different applications (e.g. lighting, ventilation) Energy efficiency measures Supplier contact information and information about further steps			
Advantages	Easy to understand Web-based Sector specific for different sectors Comprehensive			
Disadvantages	Relatively simple compared to "real" energy advise Long questionnaire Suppliers not interested in being featured in tool Incomplete translation of questionnaire from Dutch Benchmarking values valid only for Netherlands Output Data only available in json file Difficult to use for non-expert			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use **SUPPLIERS OF ENERGY SERVICES:** - Multiutilities - Professionals in energy efficiency measures			
User(s)	**SMEs:** - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use - To be used by both Energy Auditors and SMEs, so as to point out the triggered energy savings in energy use			
Source Developer/Owner	Owner and content: CCS Web development: vdLet and partners			
Form of Availability and URL	Interactive https://www.mkbenergycheckup.nl/it			

SME Energy Check-Up				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Energy Audit Tool	Self Assessment Tool	Individual SMEs	Enable
Remarks	Used in the EIT Climate-KIC BEST project for preliminary audits of companies in the Italian fashion-textile sector			

Enabling Tools

SET				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
English, Italian, Portuguese, German, Romanian, Bulgarian, Lithuanian, Croatian, Czech, Dutch and French	Energy Audit Tool	Self-Assessment Tool	Individual SMEs	Enable
Tool Aim	The tool is detailed enough to provide a relatively clear picture of the state of energy efficiency of the company and provide useful suggestions			
Input Data	Plant location Company characteristics Turnover and production Working hours Energy used (lighting, heating/air conditioning) Business strategy Process fluids with plant specifications, process machines List of processes with technical details			
Output Data	Energetic, electrical and thermal indicators (with the possibility of comparing them with Eurostat sectoral reference ones) Process indices Consumption analysis Monthly data analysis Performance comparison sheet (optional, data must be sent anonymously to the website)			
Advantages	Very complete regarding to the textile sector You are guided during the compilation			

Disadvantages	It takes some time to complete all the spreadsheets Not adaptable to sectors other than textiles Thorough knowledge is required not only of the company's consumption, but also of the various machines that are used
Beneficiary(ies)	**SMEs:** - To be used by both Energy Auditors and SMEs, so as to point out the triggered energy savings in energy use - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use **TRUSTED PARTNERS:** - Administrative Department
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Energy experts within the Technical Department
Source Developer/Owner	Result of the SET "Saving Energy in Textile SMEs" H2020 project Developer: ENEA, with support of the partners of the SET project. Owner: ENEA
Form of Availability and URL	Interactive https://em2m.eu/tools/set-tool https://em2m.eu/system/files/tools_documents/Guidance_for_companies_EN_v.2.pdf

Technical guidelines and seminars for energy audits in SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Training Tool (Capacity Building Tool)	Assessment tool	Individual SMEs	Enable
Tool Aim	The tool is intended to provide help and support to companies who want to undergo an energy audit, so as to help with the interaction with the energy auditor			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	The website contains several presentations with useful content on energy audits and energy efficiency for SMEs The presentations and slides are clear, and can be of use even as stand-alone material			
Disadvantages	There are no recorded lessons and the presentations are not fully clear by themselves The programmehas been discontinued, there's no upcoming seminar The most useful material (guidelines) is only available to registered users Presentation material is not sorted			

Technical guidelines and seminars for energy audits in SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Training Tool (Capacity Building Tool)	Assessment tool	Individual SMEs	Enable
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Administrative Department			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Energy experts within the Technical Department			
Source Developer/Owner	ES-PA project ((Energia e Sostenibilità per la PA) Developer and Owner: ENEA			
Form of Availability and URL	Print https://www.espa.enea.it/prodotti-e-servizi/linee-guida-tecniche-e-seminari-sulle-diagnosi-energetiche-nelle-pmi.html			

Guidelines for energy audits in SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Training Tool (Capacity Building Tool)	Assessment tool	Individual SMEs	Enable
Tool Aim	The tool is intended to provide help and support to companies who want to undergo an energy audit, so as to help with the interaction with the energy auditor			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	It provides very clear information about how an industrial energy audit is conducted and what content it should include The guide is quite complete and it also includes a practical example of the different levels of information that are to be included in an energy audit			
Disadvantages	It is not clear who the guidelines are intended for (SMEs, PA, or auditors) The guide is clear but not very user friendly for someone who's approaching the question for the first time It only focuses on how an audit should be written but not much on why one should do it			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:**			

Guidelines for energy audits in SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Italian	Training Tool (Capacity Building Tool)	Assessment tool	Individual SMEs	Enable
	- Administrative Department			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Energy experts within the Technical Department			
Source Developer/Owner	Regional collaboration between ENEA and Casaclima (Energy agency of the "Trentino-Alto Adige region) Developer and owner: ENEA and Casaclima			
Form of Availability and URL	Print https://www.efficienzaenergetica.enea.it/component/jdownloads/send/42-pubblicazioni-e-atti-diagnosi-energetiche/438-linee-guida-diagnosi-pmi-enea-casaclima.html			

Support Channels

FIRE - Federazione Italiana per l'uso Razionale dell'Energia			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Enable
Brief Description of Support Channel	Italian Association providing support on energy efficiency measures and incentives, energy management and training. Manages the appointments of energy managers in accordance with art. 19 of Law 10/1991 and promotes their role on behalf of the Ministry of Economic Development		
Advantages	Availability of good practices for energy efficiency Support to energy managers and stakeholders in the energy sector with information, dissemination, training Development of new tools for energy management Qualification of energy managers		
Disadvantages	News on energy issues only for Members		
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **TRUSTED PARTNERS:**		

FIRE - Federazione Italiana per l'uso Razionale dell'Energia			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Enable
	- Technical Department **SUPPLIERS OF ENERGY SERVICES:** - ESCOs - Professionals in energy efficiency measures - Trusted Advisor		
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Energy Manager **TRUSTED PARTNERS:** - Energy experts within the Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Manager - Energy Auditor - Professionals in energy efficiency measures **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Energy experts within the Relevant Technical Departments in regional and local authorities - Energy managers/ energy experts representatives of the public authorities		
URL	https://fire-italia.org/		

Education/Training about Energy for Youngsters, Enterpreneurs, Technicians			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Activate
Brief Description of Support Channel	EDUCATION: courses of the Emilia Romagna Region - Polytechnic network (managed by Ecipar di Ravenna, training center of CNA RAVENNA) on the topic of energy that offer educational tools (also for energy analysis) for those who want to enter the labor market. Energy saving and renewable energy educational programs and workshops are available. As part of the educational courses, training is also provided on topics such as energy balance and consumption analysis. TRAINING: courses for entrepreneurs dedicated to energy efficiency and environmental sustainability. As part of the educational courses, training is also provided on topics such as energy balance and consumption analysis.		
Advantages	Free support channel (Funded by Emilia Romagna Region - Italy)		

Education/Training about Energy for Youngsters, Enterpreneurs, Technicians			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Activate
Disadvantages	Support Channel Available only in defined period Support Channel not available online (only direct use)		
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor		
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Technical persons in SMEs and Energy Auditor		
URL	www.ecipar.ra.it www.itstec.it		

ENEA - Agenzia Nazionale Efficienza Energetica - Attività per le PMI			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Enable
Brief Description of Support Channel	National Energy Efficiency agency providing support to SMEs on energy efficiency and relevant incentives		
Advantages	Provides valuable contribution in the field of energy efficiency measures (guidelines and suggestions on energy audit and papers) and national incentives		
Disadvantages	Successful local case studies on energy efficiency are not listed		
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY EFFICIENCY SERVICES:** - ESCOs - Professionals in energy efficiency measures		
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Boardroom members involved in investment decision (CFO, CEO, CTO,…) - Technical persons in SMEs and Energy Auditor		

ENEA - Agenzia Nazionale Efficienza Energetica - Attività per le PMI			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Italian	Support Channel	Individual SMEs	Enable
	TRUSTED PARTNERS: - Energy experts within the Technical Department		
URL	https://www.efficienzaenergetica.enea.it/servizi-per/imprese/supporto-e-incentivazione/attivita-per-le-pmi.html		

7.4 Netherlands

For Netherlands, 35 tools have been collected. Twelve of them are Energy Audit Tool, twelve are Training Tools, one is a Support Channel and ten are categorized as “Other”. Within the Energy Audit Tool, Training Tool and “Other” there are 22 Enabling Tools, eight Activating Tools and four Organizing Tools.

Masterclass Quickscan DE (Duurzame Energie)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Individual SMEs	Activate
Tool Aim	Providing Insight			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Linked to tool Quickscan Duurzame Energie, for industries, to learn to use it			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Events available via the calendar of RVO Ability to subscribe via government website			
Form of Availability and URL	Other https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/duurzame-energie-opwekken/duurzame-energie/duurzame-energie-industrie/quickscan-duurzame-energie			

Activating Tools

ECUB Handboek aanpak collectieve verduurzaming bedrijventerreinen				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Tool Aim	Enable parkmanagers to execute collective energy projects in their business park by providing insight into the entire process. Guide with general insights, experiences and findings from a Dutch Energy Collective			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Elaborate description of best practices			

ECUB Handboek aanpak collectieve verduurzaming bedrijventerreinen				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Disadvantages	Dependent on written text to convey the knowledge and experience			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	Energie Collectief Utrechtse Bedrijven (ECUB), Publicly available			
Form of Availability and URL	Print https://www.ecub.nl/wp-content/uploads/2018/05/Handboek-aanpak-collectieve-verduurzaming-bedrijventerreinen-definitieve-versie.pdf			

Energy Potential Scan for Business Parks (EPS)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Activate
Tool Aim	Giving quick insight in energy use and (business) potential for energy measures for all enterprises on a business park. Raises awareness and interest in energy measures. The EPS gives a first order estimate for the business case for sustainable energy measures on business parks, for individual companies and for the business park as a whole. It has been developed in practice and successfully applied for several business parks in the Netherlands. It does not require company-specific data for a first estimate, as it uses geographical and other data which is open or commercially available on a national scale. Therefore, it is a relatively quick and cost-effective scan. The results are presented at the building-level and can be visualized using GIS software			

Energy Potential Scan for Business Parks (EPS)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Activate
Input Data	A default dataset is automatically composed for a business park based on general data. Only a check is needed on the resulting company list and number of employees for each company. It is possible to adjust parameter assumptions for individual companies			
Output Data	Build-up of current energy use Energy savings, CO_2 reduction Costs, savings and payback period for energy measures For each SME and on a business park level. Energy measures currently included isolation of roof, wall and glass, heat recovery, heat pump, LED and PV			
Advantages	The tool is quick and efficient because it uses general data as a default. Results are presented in a comprehensible 1-pager for each SME and for the business park as a whole. Also provides maps to give overview on a business park level			
Disadvantages	General data limits the accuracy of results A more detailed analysis is required as a follow-up to actual investments			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager **SUPPLIERS OF ENERGY SERVICES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - Energy Auditor			
Source Developer/Owner	The EPS was developed in two subsidised Dutch innovation projects (TKI) TNO			
Form of Availability and URL	Interactive https://eps.hesi.energy/			

Energy Potential Scan for Business Parks (EPS)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Activate
Remarks	Has been successfully applied for over 60 business parks in the Netherlands, and is currently applied in license form by energy advisors			

Quickguide for collective sustainability measures on business parcs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Tool Aim	Enable parkmanagers to execute collective energy projects in their businesspark by providing insight into the entire process. Guide that serves as a roadmap, with examples, practical tips, tools and various sources			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Elaborate description of best practices, supported by multiple practical tools combines the best practices of three business parks into one generic approach			
Disadvantages	Dependent on written text to convey the knowledge and experience			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Interactive http://docplayer.nl/39412333-Snelstartgids-duurzame-energiemaatregelen-op-bedrijventerreinen.html			

Description of Best practices				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Tool Aim	Enable parkmanagers to activate SMEs with examples of other business parks and their results			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	*Not Applicabile*			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Example questionnaire for collective sustainability measures on business parks				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Tool Aim	Enable parkmanagers to efficiently design a questionnaire to measure the interest of SMEs in a collective energy project			
Input Data	*Not Applicabile*			
Output Data	Questionnaire			
Advantages	Practical Application			
Disadvantages	Narrow Applicability			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			

Example questionnaire for collective sustainability measures on business parks				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Quickguide for collective financing of sustainability measures on business parks				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Activate
Tool Aim	Enable parkmanagers to realize an ESCo (Energy Service Company) on their businesspark to finance energy measures of SMEs The guide offers multiple options for energy positive initiatives and provides support for these with a focus on organizational aspects and financial resources			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Elaborate description of best practices, supported by business case tool			
Disadvantages	Dependent on written text to convey the knowledge and experience			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print https://www.bepositief.nl/wp-content/uploads/2020/03/Snelstartgids-Collectieve-Financiering-Verduurzaming-Bedrijventerreinen.pdf			

Collective financing ESCo Tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Business Case Tool	Collective of SMEs	Activate
Tool Aim	Give insight in collective financing options using ESCo constructions The goal of the tool is to develop collective financing models, that allow for the collective implementation of energy projects on business parks			
Input Data	Selection of SMEs joining in collective EE measures on a business park Financial Input Data			
Output Data	Business case in Excel for a collective investment (e.g. payback periods, annual savings, etc)			
Advantages	Available in Excel Ability to select per SME on business park if he/she joins Rather easy to use			
Disadvantages	Limited			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Energy Auditor - Park Manager - Demand Side			
Source Developer/Owner	TNO			
Form of Availability and URL	Interactive Available in Dutch through TNO			

Organizing tools

Energieteam assembler				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Organize
Tool Aim	Enable parkmanagers to assemble an energy team with sufficient support and capabilities to realise a successful collective			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Practical Application			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Value Creation Canvas				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Organize
Tool Aim	Making the values of the initiatives for multiple stakeholders explicit Representatives of all relevant stakeholders can use the Value Creation Canvas to obtain insights in shared value creation. It summarizes the interrelation between resources, activities, values and actors			
Input Data	Activities of involved stakeholders Their role within ecosystem How actors are interconnected			

Value Creation Canvas				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Organize
Output Data	Map of ecosystem and increased understanding of interdependencies			
Advantages	Facilitates discussions on current and future ecosystem and value creation			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Park Manager - Demand Side			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side			
Source Developer/Owner	TNO			
Form of Availability and URL	Other https://publications.tno.nl/publication/34619866/2Lb0eW/berkers-2015-orchestrating.pdf			

Example Implementation plan				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Organize
Tool Aim	Enable parkmanagers to efficiently design a implementation plan for their collective energy efficiency project on the businesspark			
Input Data	*Not Applicabile*			
Output Data	Implementation Plan			
Advantages	Practical Implementation			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			

Example Covenant for collaboration on sustainability				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Organize
Tool Aim	Enable parkmanagers to formalise the interest of SMEs in participating in the collective energy project.			
Input Data	*Not Applicabile*			
Output Data	Covenant			
Advantages	*Not Applicabile*			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Enabling tools

SME Energy CheckUp				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch, Italian	Energy Audit Tool (Capacity Building Tool)	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	The SME Energy Checkup is a free online scan that provides advice into and information to SMEs on energy saving measures for buildings, gains insight in energy usage and efficiency measures to improve and helps SMEs to find installers or consultants to assist them in taking the next steps			
Input Data	Energy usage Sector Surface area of facility Number of working hours Data about installations and systems (lighting, cooling, heating, ventilation, kitchen, etc etc)			
Output Data	Benchmark of energy usage with respect to sector average Balance of energy usage for different applications (e.g. lighting, ventilation) Energy efficiency measures Supplier contact information and information about further steps			
Advantages	Easy to understand Web-based Sector specific for different sectors Comprehensive			
Disadvantages	Relatively simple compared to "real" energy advise Not very attractive Long questionnaire Suppliers not interested in being featured in tool			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use **SUPPLIERS OF ENERGY SERVICES:** - Multiutilities - Professionals in energy efficiency measures			

Filter Erkende Maatregelen Energiebesparing (FEM-tool)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	The FEM tool helps SMEs in selecting relevant energy saving measures for their building(s). Through various steps, the tool makes a rapport (and/or action list) with the best measures for energy saving The aim is for SMEs to find out which of the mandatory energy efficiency measures is applicable to their company			
Input Data	All information required to test whether the mandatory energy efficiency measures are applicable. This includes energy usage, specifics on building, installations and processes			
Output Data	Measures list including applicability			
Advantages	Web-based Accessible tool Provided by government so presumably up to date, Comprehensible concerning legal framework			
Disadvantages	So complicated as to be almost unusable Resulting report difficult to parse Limited to legal framework			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision			
User(s)	**SMEs:** - SMEs subject to environmental supervision			
Source Developer/Owner	Dutch ministry of infrastructure and water management			
Form of Availability and URL	Interactive https://femtoezicht.infomil.nl/#/			
User(s)	**SMEs:** - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use - To be used by both Energy Auditors and SMEs, so as to point out the triggered energy savings in energy use			
Source Developer/Owner	Intelligent Energy Europe Owner and content: CCS - webdevelopment: vdLet and partners			
Form of Availability and URL	Interactive https://energycheckup.nl/			

WKO-Tool (ENG: Heat and Cold storage tool)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Individual SMEs	Enable
Tool Aim	The WKO tool is a website from the Dutch ministry of Economics, and provides information on whether a location is suitable for heat and cold storage			
Input Data	Geographic location Energy use & costs			
Output Data	Simple business case calculation Including payback time Indication of local regulations			
Advantages	Quick Easy to use Web-based			
Disadvantages	Limited			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Publicly available via government website			
Form of Availability and URL	Interactive https://wkotool.nl/			

Milieubeheer programma				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Process Tool	Individual SMEs	Enable
Tool Aim	It is an online planning tool, that provides SMEs with insights into mandatory measures for different industries and ways to implement these The aim is to provide SMEs with the capability to inform themselves concerning the mandatory energy efficiency measures, to find out about the practical implementations and costs and to plan them			

Milieubeheer programma				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Process Tool	Individual SMEs	Enable
Input Data	Energy usage Building energy label Status of energy efficiency measures Planning of energy efficiency manager			
Output Data	Information concerning pricing Suggested planning and implementation forms of energy efficiency measures Complete overview of measures and planning List of available suppliers of specific measures			
Advantages	Easy to understand Web-based Sector specific Concrete pricing information on different levels			
Disadvantages	No concrete questionnaire to provide guidance on applicability of measures Only the Dutch mandatory measures included Not all sectors included.			
Beneficiary(ies)	**SMEs:** - Energy Manager - SMEs subject to environmental supervision **SUPPLIERS OF ENERGY SERVICES:** - Trusted Advisors - Multiutilities			
User(s)	**SMEs:** - Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager - SMEs subject to environmental supervision			
Source Developer/Owner	Developed by the institute for sectors and associations (IVBB) at the request of MKB Nederland (Dutch SME association) Developer and Owner: IVBB			
Form of Availability and URL	Interactive https://www.milieubeheerprogramma.nl/			

Quickscan Duurzame Energie, voor de industrie (ENG: Quickscan Sustainable Energy for the industry)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Individual SMEs	Enable
Tool Aim	Providing insight in options for Sustainable Energy alternatives in Industrial processes Through a list of questions, a first advice for sustainable energy alternatives is generated with payback periods			
Input Data	Detailed information about energy use Availability of residual heat Many parameters to estimate feasibility of CO2 reduction options Including financial parameters			
Output Data	GHG emissions Energy savings Payback period Risk profile Time span of project Prioritization of several GHG emission reduction options.			
Advantages	First scan with a wide range of technical options Able to incorporate a rather good level of detail for a first scan			
Disadvantages	Expert tooling, Input Data need an expert to enter the data Government supported tool, developed in 2018, some numbers will be outdated			
Beneficiary(ies)	SMEs: - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	SMEs: - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Publicly available via government website			
Form of Availability and URL	Interactive https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/duurzame-energie-opwekken/duurzame-energie/duurzame-energie-industrie/quickscan-duurzame-energie			

Wetchecker energiebesparing (ENG: Lawcheck Energy Savings)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Self Assessment Tool	Individual SMEs	Enable
Tool Aim	Providing insight in legal obligations concerning energy saving measures. Makes an SME think about options it has for energy saving Through a list of questions one can check which legal obligations apply to an SME and how to meet these			
Input Data	Energy use Number of employees Financial results of SME Building properties & ownership			
Output Data	PDF report with overview of applicable sections for energy savings obligations			
Advantages	Web-based Easy to use Clear explanation			
Disadvantages	No information or help with implementing interventions			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Publicly available via government website			
Form of Availability and URL	Interactive https://regelhulpenvoorbedrijven.nl/Wetcheckerenergiebesparing/			

EPC (Energie Prestatie Contract) Precheck				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch, English	Energy Audit Tool (Capacity Building Tool)	Self Assessment Tool	Individual SMEs	Enable
Tool Aim	Providing insight; makes an SME think about options it has for Energy Performance Contracting Through answering questions, the tool quickly indicates whether an EPC is suitable for an SME			
Input Data	Type of building Energy costs Status of building Mindset of SME			
Output Data	Annual cost savings and EPC readiness			
Advantages	Web-based Easy to use Clear explanation			
Disadvantages	No information or help with implementing interventions			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	H2020 project GuarantEE, publicly available			
Form of Availability and URL	Interactive Dutch version: https://epccheck.eu/nl/index English version: https://www.epccheck.eu/en/index			

Energiebesparingsverkenner Kantoren (ENG: Quickscan for Energy Savings in Office Buildings)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Self Assessment Tool	Individual SMEs	Enable
Tool Aim	Providing insight. Makes an SME think about options it has for energy saving			
Input Data	Office characteristics Isolation Heating and cooling systems (current and new situation)			
Output Data	GHG emissions saved per m2 Energy savings (yearly) Investment costs and payback period Energy label			
Advantages	Easy to use Able to calculate results for 9 measures (isolation, HVAC, lighting and PV)			
Disadvantages	Local exe file Limited set of answer options Only dropdowns Only for offices			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Publicly available via government website			
Form of Availability and URL	Interactive https://energieslag.rvo.nl/file/download/51151588/Energiebesparingsverkenner%20Kantoren			

Energy System Simulator (ESSIM)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Enable
Tool Aim	Providing support in designing sustainable local energy systems, which are in balance throughout the year A short description of the tool can be found here: https://energytransition.gitbook.io/esdl/esdl-based-tools/essim			
Input Data	The Output Data of the EPS tool Hourly energy profiles from the larger SMEs on a business park and the capacity of relevant electrical substations			
Output Data	Hourly energy balance for all energy commodities (e.g. electricity, natural gas, heat, H_2) on a business park, for each asset, for different scenario configurations CO_2 emission Load curves			
Advantages	With the use of a map interface, it is easy to configure energy scenarios for a business park. Covers the short time-scale aspects of the energy transition which become more important with electrification and the increased penetration of renewables			
Disadvantages	Expert tooling Results require interpretation and processing to stakeholder results by an energy advisor			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager - Other (Representatives from the SMEs on the business park involved in the energy transition on the business park; local governments involved in the energy transition on business parks; DSO's providing energy network capacity to the business park)			
User(s)	**SMEs:** - Energy Auditor			
Source Developer/Owner	Developed in a number of R&D projects (TNO) Developer and Owner: TNO			
Form of Availability and URL	I Interactive https://github.com/ESDLMapEditorESSIM Short Description of the tool: https://energytransition.gitbook.io/esdl/esdl-based-tools/essim			

Energy System Simulator (ESSIM)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Enable
Remarks	The tooling has been successfully applied for several local and regional energy transition processes. This year, a first successful pilot took place to apply the tooling on a business park			

Flex Scan				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Enable
Tool Aim	Gives insight in possible energy flexibility providers and accompanying costs & benefits of unlocking these			
Input Data	Electricity usage Sector Process information Check on key assumptions Goal for use of local energy flexibility			
Output Data	First indication of available flexibility on business parks Type of flexibility % of possible own consumption of local energy supply (e.g. PV) Indication of business case for unlocking the flexibility			
Advantages	Quick results for a difficult topic as energy flexibility, including first financial analysis.			
Disadvantages	General data limits the accuracy of results. A more detailed analyses is required as a follow-up for actual investments.			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Energy Auditor - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor			

Flex Scan				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Enable
Source Developer/Owner	Developed for Dutch business parks & SMEs Available via TNO by the end of 2021			
Form of Availability and URL	Interactive Available via TNO by the end of 2021			
Remarks	Under Development			

Four types of entrepreneur				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Give insight to the parkmanagers in the different types of entrepreneurs and the arguments they need to activate them with regard to energy efficiency			
Input Data	*Not applicable*			
Output Data	*Not applicable*			
Advantages	Insight into the different types of entrepreneurs and suitable arguments			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** Park Manager - Demand Side SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Instruction for the design of flyers for door-to-door communication to SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently design a flyer which specifically highlights the aspects of interest to the Individual SMEs			
Input Data	*Not applicable*			
Output Data	Ability to design flyer			
Advantages	Practical implementation that helps designing flyers			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Marketing tips for communication with the four types of entrepreneurs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently design marketing and communication efforts which specifically highlight the aspects of interest to the SME			
Input Data	*Not applicable*			
Output Data	*Not applicable*			
Advantages	Practical implementation of the four entrepreneurial types to communication efforts			
Disadvantages	*Not applicable*			

Marketing tips for communication with the four types of entrepreneurs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Training for parkmanagers				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to execute collective energy projects in their businesspark by providing insight into the entire process			
Input Data	*Not applicable*			
Output Data	Ability to set up collective initiatives			
Advantages	Very practical training			
Disadvantages	Time consuming			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Interactive Available in Dutch through TNO/Clok			

Example business propositions for four collective actions				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Training Tool (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently build a business proposition for their collective project			
Input Data	*Not applicable*			
Output Data	*Not applicable*			
Advantages	Detailed insight into activities			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Business case tool for four collective actions				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Business Case Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently formulate a business case for their collective project			
Input Data	Input Data for business case: financial parameters & techno-economical parameters			
Output Data	Business case			
Advantages	Detailed insight into costs and profits			
Disadvantages	Simplified business case			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			

Business case tool for four collective actions				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Business Case Tool	Collective of SMEs	Enable
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Interactive Available in Dutch through TNO			

Checklist contracting suppliers				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently contract suppliers which have the interest of the collective project at hearth			
Input Data	*Not applicable*			
Output Data	*Not applicable*			
Advantages	Practical applicability			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Example tender document				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently select suppliers which have the interest of the collective project at hearth			
Input Data	*Not applicable*			

Example tender document				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Output Data	Completed Tender			
Advantages	Practical applicability			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Supplier selection tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to efficiently select suppliers which have the interest of the collective project at hearth			
Input Data	*Not applicable*			
Output Data	*Not applicable*			
Advantages	Practical applicability			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			

Source Developer/Owner	TNO, Publicly available
Form of Availability and URL	Print Available in Dutch through TNO

Checklist for the contract with SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Enable parkmanagers to formalise the participation of SMEs in the collective energy project			
Input Data	*Not applicable*			
Output Data	Ability to write good contract			
Advantages	Practical applicability			
Disadvantages	*Not applicable*			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Park Manager - Demand Side			
Source Developer/Owner	TNO, Publicly available			
Form of Availability and URL	Print Available in Dutch through TNO			

Verkenning restwarmtebenutting (ENG: Quickscan Residual Heat Utilization)				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Energy Audit Tool (Capacity Building Tool)	Quick-Scan Tool	Collective of SMEs	Enable
Tool Aim	Makes an SME think about options it has for residual heat utilization A spreadsheet tool that provides insight into whether residual heat utilization can be used efficiently			
Input Data	Residual heat availability Heat demand Ownership of buildings & heat Possibilities for creating infrastructure			
Output Data	First inventory of options for use of residual heat locally			
Advantages	Provide SMEs with insight into options			
Disadvantages	Excel tool Not really user friendly Tool made in 2011, some numbers will be outdated			
Beneficiary(ies)	**SMEs:** - Park Manager - Demand Side - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Publicly available via government website			
Form of Availability and URL	Interactive https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/duurzame-energie-opwekken/verduurzaming-warmtevoorziening/verkenning-restwarmtebenutting			

Wood combustion feasibility scan				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Dutch	Other (Capacity Building Tool)	Quick-Scan Tool	Individual SMEs	Enable
Tool Aim	Based on a list of input data, the tool indicates whether a biomass boiler is feasible for an SME			
Input Data	Energy usage Pricing of energy Sector Biomass prices and availability			
Output Data	Business case for the application of a biomass boiler			
Advantages	Quick and relatively detailed Focused purely on one technology			
Disadvantages	Does not inform about true business case based on full situation and quotes Only one technology Biomass niche and losing in popularity			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager			
User(s)	**SMEs**: - Relevant Energy Auditor and Energy Manager in the SMEs - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Developed through a provincial subsidy Developer and Owner: CCS			
Form of Availability and URL	Interactive https://www.ccsenergieadvies.nl/houtverbrandingsscan-online/index.htm			

RVO			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Dutch	Support Channel	Individual SMEs	Enable
Brief Description of Support Channel	This is a tool for finding subsidy for SME's for the use of energy saving measures and production		
Advantages	An overview of all the subsidies		
Disadvantages	Local subsidies are not pointed out to		
Beneficiary(ies)	**SMEs**: - Park Manager - Demand Side - To be used by both Energy Auditors and SMEs, so as to point out the triggered energy savings in energy use - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **TRUSTED PARTNERS:** - Administrative Department **SUPPLIERS OF ENERGY SERVICES:** - Trusted Advisors		
User(s)	**SMEs:** - Boardroom members involved in investment decision (CFO, CEO, CTO,…) - Energy Manager		
URL	https://www.rvo.nl/subsidie-en-financieringswijzer		
Remarks	It is a Government initiative. This is not an energy saving tool, but still very important in the decision-making process of the SME's		

7.5 Romania

In Romania, eight tools have been collected. Five of them are Energy Audit Tools, two are Training Tools and one is categorized as "Other". All tools are Enabling.

Energy Analytics				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	The tool is used to data processing which is needed for energy audit. The data processing consists of electricity, fossil fuel data introduction, with suggestive graphs representation. Also, Hourly power load can be introduced and calculate monthly data, comparing with the billed amount			
Input Data	Monthly energy data and cost Hourly power load Production data			
Output Data	Graphs based on the Input Data CO_2 emission			
Advantages	The tool helps to visualize the consumed energy monthly/yearly			
Disadvantages	The tool does not calculate potential savings			
Beneficiary(ies)	**SMEs:** - Energy Auditor - Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - ESCOs			
User(s)	**SMEs:** - Energy Auditor - Energy Manager **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Developed by Servelect and Technical University of Cluj Napoca, Romania and it is used internally			
Form of Availability and URL	Other Available through Servelect within GEAR@SME Project			

Enabling tools

PINE AUDIT TOOL				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
English	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	The objective of the PINE is to increase energy efficiency in industrial SMEs. It contains a simplified energy auditing schemes. As an Input Data 3 sheets needs to be filled: basic data electricity, basic data heat, overview electricity, overview heat			
Input Data	Company information and contact person Monthly electricity data (el. Consumption, billed demand, total cost, energy cost, grid costs) Fossil fuel type, monthly consumption and costs Questions regarding the electricity and fossil fuel use etc			
Output Data	Energy saving and cost saving for all type of energy introduces Potential electricity and heat (fossil fuel) savings CO_2 emission calculation based on the type of energy and conversion factor Possibilities to estimate energy efficiency of boilers, quantifying the energy losses			
Advantages	Very complex, it involves a lot of information about the consumers within an entity			
Disadvantages	Due to complexity, the user needs to have more than basic technical knowledge to answer questions and insert data, but also for interpreting Output Data			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - ESCOs			

PINE AUDIT TOOL				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
English	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use - Energy Manager **TRUSTED PARTNERS:** - Energy experts within the Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Professionals in energy efficiency measures **PUBLIC SECTOR/REGIONAL AND LOCAL AUTORITIES:** - Energy experts within the Relevant Technical Departments in regional and local authorities			
Source Developer/Owner	Intelligent Energy Europe Developer: STENUM GmbH, Graz, Austria			
Form of Availability and URL	Interactive http://pineaudit.eu/eng/resources.aspx			

PV Generation				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment Tool	Individual SMEs	Enable
Tool Aim	The SMEs can see the potential for PV installation in their sites for own use of generated electricity			
Input Data	Area available for PV mounting Other data from https://re.jrc.ec.europa.eu/pvg_tools/en/tools.html			
Output Data	PV installed power Investment cost Energy saving/year			
Advantages	Easy implementation			
Disadvantages	The tool is using an internal webpage which is not integrated in the tool. The webpage might look complicated at first sight for the users			
Beneficiary(ies)	**SMEs:** - Energy Auditor			

PV Generation				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment Tool	Individual SMEs	Enable
	- Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - ESCOs			
User(s)	**SMEs:** - Energy Auditor - Energy Manager - Relevant Energy Auditor and Energy Manager in the SMEs **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Developed by Servelect and Technical University of Cluj Napoca, Romania and it is used internally			
Form of Availability and URL	Other Available through Servelect within GEAR@SME Project			

CHP (combined heat and power) generation				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	The SMEs can see the potential for CHP installation in their sites for own use of generated electricity			
Input Data	Electricity and methane gas price Annual operating time of the existing thermal power plant which will be replaced with the CHP unit Monthly electricity and methane gas data for 1 year,			

CHP (combined heat and power) generation				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Output Data	Current CO_2 emission Reduction after implementation Total energy (consumption and cost) Cost saving Electricity and methane consumption consumed and generated by the CHP unit.			
Advantages	With the right data and price offer, it can show a clear image of the cost savings when implementing a cogeneration unit			
Disadvantages	Uses a lot of input data			
Beneficiary(ies)	**SMEs:** - Energy Auditor - Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - ESCOs			
User(s)	**SMEs:** - Energy Auditor - Energy Manager - Relevant Energy Auditor and Energy Manager in the SMEs **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Developed by Servelect and Technical University of Cluj Napoca, Romania and it is used internally			
Form of Availability and URL	Other Available through Servelect within GEAR@SME Project			

Energy Balances				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian	Energy Audit Tool	Self-Assessment tool	Individual SMEs	Enable
Tool Aim	One can use these instruments in excel files, so as to identify and better understand the useful and energy losses components on their equipment's			
Input Data	Nominal parameters Measurements Consumptions			
Output Data	Losses Real and optimized balances			
Advantages	It is useful to see how energy/energy flows are used			
Disadvantages	Need more knowledge about energy consumers The optimized balances need sufficient data to be calculated			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - ESCOs			
User(s)	**SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager			
Source Developer/Owner	Developed by Servelect and Technical University of Cluj Napoca, Romania and it is used internally			
Form of Availability and URL	Other Available through Servelect within GEAR@SME Project			

MOVI				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Other	Energy Management Tool	Individual SMEs	Enable
Tool Aim	Servelect for the Romanian pilot sites, can provide an online demo tool and 6 on-site metering points, as an energy monitoring and management tool			
Input Data	Hardware part of the tool			
Output Data	Data visualization about the consumption			
Advantages	Very clear image of the energy consumption			
Disadvantages	The tool has a hardware part which needs to be installed			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Technical Department			
User(s)	**SUPPLIERS OF ENERGY SERVICES:** - Energy Manager			
Source Developer/Owner	Servelect, Romania			
Form of Availability and URL	www.wattics.com			

Monitoring & Targeting				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Training Tool	Monitoring tool	Individual SMEs	Enable
Tool Aim	Monitoring & Targeting Tool (M&T) is a management technique that can be utilized to monitor utility costs and to drive energy costs downwards, using energy analytics. The tool will be used by the trainees of the Education&Training programme within the SMEmPower project			
Input Data	NACE code Monthly production data (unit, cost) Monthly electricity data and fossil fuel data (consumption, cost)			

Monitoring & Targeting				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Training Tool	Monitoring tool	Individual SMEs	Enable
Output Data	Baseline energy use Charts based on basic electricity data and fossil fuel data Specific energy use Share of energy and cost Optimized energy use based on regression models CO_2 emission			
Advantages	Basic monthly data is used The charts clearly show the energy use in a year or more Targeting part is developed with regression models			
Disadvantages	As the tool is still developed, no disadvantages were identified so far			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - To be used by Energy Auditors, so as to point out the targets in energy use			
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side - Energy Manager **TRUSTED PARTNERS:** - Energy experts within the Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - Professionals in energy efficiency measures			
Source Developer/Owner	The tool is developing by the Romanian partners (Servelect, Technical University of Cluj-Napoca) and partners from Greece, all part of the consortium In the SMEmPower Efficiency project			
Form of Availability and URL	Other https://smempower.com/			

Monitoring & Targeting				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Training Tool	Monitoring tool	Individual SMEs	Enable
Remarks	The tool will be available from the end of 2020 at the project website, and the users can access them via an account on the training platform			

Measurement & Verification				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Training Tool	Self Assessment tool	Individual SMEs	Enable
Tool Aim	Measurement and Verification (M&V) tool aims to quantify energy consumption both before and after an energy conservation measure package is implemented, to verify the level of savings.			
Input Data	NACE code Monthly production data (unit, cost) Monthly electricity data and fossil fuel data (consumption, cost) Reference/baseline energy level			
Output Data	Different KPIs Potential or achieved electricity/fossil fuel savings Savings and CO_2 reduction Specific energy use ODEX Energy effectiveness as qualitative indicator			
Advantages	Energy effectiveness indicator is a suggestive indicator when it comes to production, showing the productive and unproductive consumption, for two consecutive years' data			
Disadvantages	As the tool is still developed, no disadvantages were identified so far			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - To be used by both Energy Auditors and SMEs, so as to point out the targets in energy use **TRUSTED PARTNERS:** - Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - ESCOs			

Measurement & Verification				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Romanian, English	Training Tool	Self Assessment tool	Individual SMEs	Enable
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side - Energy Manager **TRUSTED PARTNERS:** - Energy experts within the Technical Department **SUPPLIERS OF ENERGY SERVICES:** - Energy Auditor - Energy Manager - Professionals in energy efficiency measures			
Source Developer/Owner	The tool is developing by the Romanian partners (Servelect, Technical University of Cluj-Napoca) and partners from Greece, all part of the consortium In the SMEmPower Efficiency project			
Form of Availability and URL	Other https://smempower.com/			
Remarks	The tool will be available from the end of 2020 at the project website, and the users can access them via an account on the training platform			

7.6 Sweden

For Sweden, 18 tools have been collected. Two of them are Energy Audit Tool, six are Training Tools, five are Support Channels and the remaining five have been categorized as “Other”. Within the Energy Audit Tool, Training Tool and “Other” there are ten Enabling Tools and twelve Activating Tools.

Activating tools

Inspiration movies, good examples				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool (Capacity Building Tool)	Process tool	Individual SMEs	Activate
Tool Aim	Inspire people to work with energy efficiency			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Short Videos			
Disadvantages	Only available in Swedish Do not cover more than a few different sectors, which means that SMEs might not recognize themselves in the examples			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision - SMEs and/or relevant Energy Auditor and Energy Manager - Park Manager - Demand Side **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - SMEs subject to environmental supervision - Energy Manager - Park Manager - Demand Side **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
Source Developer/Owner	County administrative boards and SEA (EU funding - ERDF)			
Form of Availability and URL	Other (Short Videos) http://www.energimyndigheten.se/nrp/incitament-for-energieffektivisering/metodstod/inspirationsfilmer-for-energieffektivisering/			

Templates for action plans

Language Availability	Tool Category	Tool Typology	Addressed to	Scope of the tool
Swedish	Other	Energy Management tool	Individual SMEs	Activate
Tool Aim	Templates for setting up a company's action plan for implementation of EE measures			
Input Data	Basic data about the measures to be implemented (costs, energy savings, non-energy benefits, time plan, responsibility, follow-up plans etc)			
Output Data	Structured action plan			
Advantages	Both a basic and a more advance template is available Linked to guidebook for how to develop the action plan Excel-based makes it easy to adapt to company needs and profile			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision - SMEs and/or relevant Energy Auditor and Energy Manager - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - SMEs subject to environmental supervision - Energy Manager **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
Source Developer/Owner	County administrative boards and SEA (EU funding - ERDF) Developer: CIT Industriell Energi			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/globalassets/smf/incitament-for-energieffektivisering/mall-for-atgardsplan.xlsx			

Self-assessment tool for energy management

Language Availability	Tool Category	Tool Typology	Addressed to	Scope of the tool
Swedish	Other (Capacity Building Tool)	Self Assessment tool	Individual SMEs	Activate
Tool Aim	The guidebook "Företagets energitrappa" aims to support companies to work in a structured and systematic way with energy efficiency The tool can be used for a self-assessment of the level of energy management practices in the company, and guides the user to where to start reading the guidebook			
Input Data	Answer questions such as "does the company have energy targets?" (yes/no) "Does the company have an energy policy?"(yes/no) "Does the company consider energy when taking investment decisions?" (yes/no)			
Output Data	Level of energy management Recommended next steps			
Advantages	Simple to use (only yes/no) Clearly linked to guidebook for energy management			
Disadvantages	*Not Applicabile*			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision - SMEs and/or relevant Energy Auditor and Energy Manager - Energy Manager **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - SMEs subject to environmental supervision - Energy Manager **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
Source Developer/ Owner	County administrative boards and SEA (EU funding - ERDF)			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/globalassets/smf/incitament-for-energieffektivisering/foretagets-energitrappa-sjalvskattning.xlsm http://www.energimyndigheten.se/contentassets/b96313d9096d4771b7de7cb16f9d7e3b/foretagets-energitrappa.pdf			

Enabling tools

Life cycle cost calculation tool				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Energy Audit Tool	Energy Management tool	Individual SMEs	Enable
Tool Aim	Calculate life cycle costs of energy efficiency measures			
Input Data	Energy savings Energy prices Investment and operating costs Monetized non-energy benefits Discount rates etc			
Output Data	Life cycle cost			
Advantages	General (applicable to different types of EE measures) Quite simple Excel-based makes it easy to connect to other calculations/reporting documents and adapt it according to company investment criteria			
Disadvantages	May be non-intuitive and require the use of the manual in some parts.			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision - SMEs and/or relevant Energy Auditor and Energy Manager **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - SMEs subject to environmental supervision - Energy Manager **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
Source Developer/Owner	County administrative boards and SEA (EU funding - ERDF) Developer: CIT Industriell Energi			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/globalassets/smf/incitament-for-energieffektivisering/lcc-verktyg.xlsm http://www.energimyndigheten.se/nrp/incitament-for-energieffektivisering/metodstod/atgardsplaner-for-energieffektivisering/			

Template for monitoring and follow-up of key performance indicators for company energy use				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Energy Audit Tool	Monitoring Tool	Individual SMEs	Enable
Tool Aim	Support companies in monitoring and following up their own energy use			
Input Data	Energy consumption Number of employees Area Operational hours Production, etc			
Output Data	Key performance indicators for energy use			
Advantages	Simple and Excel-based (easy to connect to other data sources)			
Disadvantages	Limited			
Beneficiary(ies)	**SMEs:** - Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager - Park Manager - Demand Side			
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs - Park Manager - Demand Side			
Source Developer/Owner	Swedish Energy Agency (SEA)			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/globalassets/energieffektivisering_/jag-vill-energieffektivisera-mitt-foretag/block-jag-vill-energieffektivisera-mitt-foretag/energiledning2/mall-energiuppfoljning-och-nyckeltal-pa2_energiledning.xlsx			
Remarks	More info: http://www.energimyndigheten.se/energieffektivisering/jag-vill-energieffektivisera-min-organisation/vagledning-och-hjalp/energiledning/			

Guidebooks for energy efficiency in SMEs				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool (Capacity Building Tool)	Energy Management tool	Individual SMEs	Enable
Tool Aim	Support for energy management, information about BAT and good and relevant guides to implementation of energy efficiency measures. (Also provides knowledge of regulatory requirements related to energy efficiency in Sweden.)			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Guidebooks used as a resource in connection with environmental inspection and enforcement Available in both short and extended versions			
Disadvantages	Difficult for companies to find			
Beneficiary(ies)	**SMEs:** - SMEs subject to environmental supervision - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
User(s)	**SMEs:** - SMEs subject to environmental supervision - Energy Manager - Technical persons in SMEs and Energy Auditor **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Environmental inspectors, combining supervision with support for energy efficiency improvements			
Source Developer/Owner	County administrative boards and SEA (EU funding - ERDF). Part of the material developed by CIT Industriell Energi			
Form of Availability and URL	Print http://www.energimyndigheten.se/nrp/incitament-for-energieffektivisering/metodstod			
Remarks	These guidebooks are connected to a set of tools for self-assessment, life cycle cost calculations and action plans for implementation of energy efficiency measures.			

On-line web course about energy efficiency				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish, English*	Training Tool (Capacity Building Tool)	Process tool	Individual SMEs	Enable
Tool Aim	Learn about energy use and energy efficiency			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Interactive course			
Disadvantages	Only available for a few sectors			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Energy Manager - Park Manager - Demand Side			
User(s)	**SMEs:** - Energy Manager - Park Manager - Demand Side			
Source Developer/Owner	SEA (EU funding - ERDF)			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/nrp/natbaserat-larande/online-training--energy-smart-companies/			
Remarks	The courses are aimed at hotels, restaurants, technology companies, installers and food companies. *Courses for Energy-smart hotels and Energy-smart restaurants are available in English.			

Energilyftet				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Energy Management Tool	Individual SMEs	Enable
Tool Aim	Promote construction and renovation into low-energy buildings			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Interactive learning tool Focus on building but much of the content is generally useful for energy efficiency			

Energilyftet				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Energy Management Tool	Individual SMEs	Enable
Disadvantages	Limited to energy efficiency in buildings			
Beneficiary(ies)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side **SUPPLIERS OF ENERGY SERVICES:** - Energy Manager - Trusted Advisors - Stakeholders in building sector			
User(s)	**SMEs:** - Park Manager - Demand Side - Energy Manager - Technical persons in SMEs and Energy Auditor **SUPPLIERS OF ENERGY SERVICES:** - Energy Manager - Trusted Advisors - Stakeholders in building sector			
Source Developer/Owner	SEA & CIT Energy management			
Form of Availability and URL	Interactive http://energilyftet.learnways.com/			
Remarks	Aimed at architects, engineers, construction project managers, technical managers and operating staff			

Energibyggare				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Process Tool	Individual SMEs	Enable
Tool Aim	Increase knowledge about energy efficiency in the construction sector			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Interactive learning tool			
Disadvantages	Limited to energy efficiency in construction sector			
Beneficiary(ies)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side			

Energibyggare				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Process Tool	Individual SMEs	Enable
	SUPPLIERS OF ENERGY SERVICES: - Trusted Advisors - Construction Companies			
User(s)	**SMEs:** - Energy Manager - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor **SUPPLIERS OF ENERGY SERVICES:** - Trusted Advisors - Constructor			
Source Developer/Owner	Autotech (creator of technical solution) Owner: Byggföretagen			
Form of Availability and URL	Interactive https://energibyggare.instante.se/course/view.php?id=2			
Remarks	Aimed at construction workers and installers/mechanics			

Save energy in small industries, Save energy in offices				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Process Tool	Individual SMEs	Enable
Tool Aim	Provide information about energy efficiency measures in small industries and in offices			
Input Data	*Not Applicable*			
Output Data	*Not Applicable*			
Advantages	Key figures, check lists, scenarios etc.			
Disadvantages	Long document			
Beneficiary(ies)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor - Park Manager - Demand Side			
User(s)	**SMEs:** - Energy Manager - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor			

Save energy in small industries, Save energy in offices				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Training Tool	Process Tool	Individual SMEs	Enable
Source Developer/Owner	Energieffektiviseringsföretagen (Trade organization of Energy Efficiency Service Companies)			
Form of Availability and URL	Print Small industries: https://wwwsvenskventila.cdn.triggerfish.cloud/uploads/2014/07/industrier_eef_13okt_low.pdf Office: https://energieffektiv.com/material/rad-for-energieffektivisering-inom-kontor/			

A tool for added values from energy efficiency				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Other	Assessment Tool	*Not Applicabile*	Enable
Tool Aim	Show the added value that can follow from energy efficiency, such as increased public health or reduced greenhouse gas emission. Targeted for organizations in the public sector, but can be used by other types of organizations to some extent.			
Input Data	Energy savings Effect on health GHG emissions Macroeconomic effect Productivity Energy price Energy delivery, etc.			
Output Data	Summary of effects on social Environmental and economic sustainability			
Advantages	Graphical Output Data			
Disadvantages	Focus on multiple benefits from a societal - and not a company - perspective			
Beneficiary(ies)	**SMEs:** - Energy Manager - Boardroom members involved in investment decision (CFO, CEO, CTO,…) **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Public Sector			

A tool for added values from energy efficiency				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Other	Assessment Tool	*Not Applicabile*	Enable
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs **PUBLIC SECTOR/REGIONAL AND LOCAL AUTHORITIES:** - Public Sector			
Source Developer/Owner	Swedish Energy Agency (SEA) Based on a tool from IEA			
Form of Availability and URL	Interactive http://www.energimyndigheten.se/globalassets/energieffektivisering_/jag-vill-energieffektivisera-mitt-foretag/dokument/visualiserade-mervarden-av-energieffektivisering_webb-170428.xlsm Based on: https://www.iea.org/publications/freepublications/MultiplBenef_ofEnergyEficiency.pdf			

EENet internal collaboration site				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
Tool Aim	Process tool and project internal support channel			
Input Data	*Not Applicabile*			
Output Data	*Not Applicabile*			
Advantages	Extensive resource with diverse content. Covers activate, organize AND enable principles - in a collective approach. Contains a lot of training material, and tools for networking methodology			
Disadvantages	Less focus on e.g. energy audits and calculation tools, since this is done by energy experts connected to the EE networks			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager **TRUSTED PARTNERS:** - Technical Department - Network Coordinators			
User(s)	**SMEs:** - Relevant Energy Auditor and Energy Manager in the SMEs			

EENet internal collaboration site				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Other (Capacity Building Tool)	Process Tool	Collective of SMEs	Enable
	- Park Manager - Demand Side **TRUSTED PARTNERS:** - Energy experts within the Technical Department - Network Coordinators **SUPPLIERS OF ENERGY SERVICES:** - Trusted Advisor			
Source Developer/Owner	SEA (partly with funding from European Regional Development Fund through the National Regional Fund Program). Some of the material developed by CIT Industriell Energi. Access for this project granted by SEA.			
Form of Availability and URL	Material developed for the coordinators of the EENet (energy efficiency networks). NOT publicly available (not possible to provide link), BUT available for this project via CIT Industriell Energi. http://www.energimyndigheten.se/energieffektivisering/jag-vill-energieffektivisera-min-organisation/vagledning-och-hjalp/energiledning/			
Remarks	Diverse content. Includes guides for recruitment of SMEs, educational material developed for network meetings, guides for networking methodology (including motivational methods), guides including information about relevant energy efficiency measures, energy management etc.			

Checklists for decisions about prioritization and financing of energy efficiency measures				
Language Availability	**Tool Category**	**Tool Typology**	**Addressed to**	**Scope of the tool**
Swedish	Other	Process Tool	Individual SMEs	Enable
Tool Aim	Useful support for decision-making about energy efficiency in SMEs			
Input Data	Proposed energy efficiency measure			
Output Data	Check that everything is ready to prepare business case Evaluate risk and present an energy efficiency measure to decision-makers			
Advantages	Simple to use			
Disadvantages	No links to documentation that further explains the points on the checklists			
Beneficiary(ies)	**SMEs:** - SMEs and/or relevant Energy Auditor and Energy Manager - Boardroom members involved in investment decision (CFO, CEO, CTO,…) - Energy Manager			
User(s)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor			
Source Developer/Owner	Swedish Energy Agency (SEA)			
Form of Availability and URL	http://www.energimyndigheten.se/guide-for-energieffektiva-foretag/verktyg-i-arbetet/?currentTab=4#mainheading			
Remarks	Three checklists: 1. Checklist to create a business case 2. Checklist to handle risks of projects 3. Checklist for presentation of measures to decision-markers			

Support Channels

Swedish Energy Agency's web portal for Energy efficiency support to SMEs			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel (Capacity Building Tool)	Individual SMEs	Enable
Brief Description of Support Channel	Swedish Energy Agency offers support to SMEs on energy efficiency. Relevant information about available support, as well as links to online training courses, methods and tools are collected in this support channel / web page. Introducing SMF to why work with energy efficiency and direct them to available support, online training, and methods and tools		
Advantages	Targeted towards SMEs. Collects information about all support (and tools) available for SMEs as funded by ERDF.		
Disadvantages	Connected to specific, time-limited projects under the National Regional Developed programme (see Tool " Guide for energy efficient companies", which however is not targeted specifically towards SMEs)		
Beneficiary(ies)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor - Boardroom members involved in investment decision (CFO, CEO, CTO,…)		
User(s)	**SMEs:** - Energy Manager - Technical persons in SMEs and Energy Auditor		
Source	Swedish Energy Agency (SEA) (partly with funding from European Regional Development Fund through the National Regional Fund Program)		
URL	http://www.energimyndigheten.se/smf		
Remarks	This is a national website introducing SMF to why work with energy efficiency, available funding, available online support, newsletters, counseling/support, online training courses etc		

BELOK			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel (Capacity Building Tool)	Individual SMEs	Enable
Brief Description of Support Channel	Several different tools are available free of charge, to make calculations for BUILDINGS in areas such as investments (life-cycle costs), energy calculations in very early construction stages, the so called Total Concept and heat recovery. May be further explored, if relevant		
Advantages	Several calculation tools available		
Disadvantages	For buildings only		
Beneficiary(ies)	**SMEs:** - Energy Manager - SMEs and/or relevant Energy Auditor and Energy Manager - Technical persons in SMEs and Energy Auditor		
User(s)	**SMEs:** - Technical persons in SMEs and Energy Auditor - Energy Manager		
Source	BELOK (funded by SEA and member companies in Real estates)		
URL	http://belok.se/		
Remarks	The mission of the network is to drive the development to reduce energy use in real estates. The focus is on smart methods and smart technology. An equally important task is to spread knowledge to inspire change		

ICHB Theme: Energy			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel	Individual SMEs	Enable
Brief Description of Support Channel	Articles, guides, checklists and information about ventilation, district heating and solar heating, insulation and operational optimization		
Advantages	Pedagogical and nice visualizations		
Disadvantages	Focus on buildings/offices only		
Beneficiary(ies)	**SMEs:** - Energy Manager - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor		

ICHB Theme: Energy			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel	Individual SMEs	Enable
User(s)	**SMEs:** - Park Manager - Demand Side - Energy Manager - Technical persons in SMEs and Energy Auditor **SUPPLIER OF ENERGY SERVICES:** - Energy Manager - Trusted Advisors		
Source	ICHB (mission from National Board of Housing, Building and Planning)		
URL	https://www.ichb.se/malgrupper/kontor/tema-energi/		

Jernkontorets energy guide			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel	Individual SMEs	Enable
Brief Description of Support Channel	Energy information and tips, interactive assessment tools, calculation support, etc.		
Advantages	Pedagogical material developed over a long time		
Disadvantages	Focus on iron and steel industry, i.e., not typically SMEs		
Beneficiary(ies)	**SMEs:** - Energy Manager - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor		
User(s)	**SMEs:** - Park Manager - Demand Side - Energy Manager - Technical persons in SMEs and Energy Auditor		
Source	Jernkontoret (Trade organization for companies in Iron and Steel sector)		
URL	https://www.energihandbok.se/		

Guide for energy efficient companies			
Language Availability	**Tool Category**	**Addressed to**	**Scope of the Support Channel**
Swedish	Support Channel (Capacity Building Tool)	Individual SMEs	Enable
Brief Description of Support Channel	Swedish Energy Agency offers support on energy efficiency. Links to online training courses, methods and tools are collected in this support channel / web page		
Advantages	All relevant information and tools available through one web page / link. Good entrance to SEAs vast resources of support on energy efficiency for companies. Not connected to specific support programmes/projects		
Disadvantages	Some links and documents seem to be missing or not working		
Beneficiary(ies)	**SMEs:** - Energy Manager - Park Manager - Demand Side - Technical persons in SMEs and Energy Auditor		
User(s)	**SMEs:** - Park Manager - Demand Side - Energy Manager - Technical persons in SMEs and Energy Auditor		
Source	Swedish Energy Agency (SEA)		
URL	www.energimyndigheten.se/energieffektivaforetag		
Remarks	Inspiring and supporting companies (not only SMEs) to work with energy efficiency and direct them to available support, online training, and methods and tools		

8 Policies and funding schemes

The questionnaire on which the contents of this chapter is based can be found in Appendix D.

8.1 Germany

8.1.1 Policies

Existing policies with regard to energy efficiency in SMEs
Germany has committed itself to reduce its CO_2 emissions by 2020 by 40% and by 80 - 95% by 2050, compared to the year 1990. Based on these objectives, the government has developed a "Climate protection plan", which defines reduction objectives for sectors and for sources of emission. A focus is on reducing the energy consumption related to buildings, which are to be reduced by 80% by 2050. But while there exists an overall objective to reduce energy consumption for the different sectors, this is not broken down to targets for the individual SME.

Almost all enterprises in Germany are SMEs (99,4%) and they are accordingly responsible for a large share of the energy consumption. Nevertheless, there are no obligations for SMEs to act directly on energy efficiency or to reduce their energy consumption. The focus is on motivating SMEs to act on energy efficiency and supporting energy efficiency measures in SMEs. This is done through awareness-raising campaigns, funding energy consultation and measures in SMEs and by supporting networks and initiatives that support SMEs in improving their energy efficiency.

The existing energy efficiency obligations apply only to large companies. As this is based on the EU Definition of SMEs, this will include SMEs that are affiliated to large companies or (partially) publicly owned. These companies are therefore obliged to do an audit every 4 years, unless they are under a certain level of energy consumption per year. Tax breaks and financial incentives that are available for companies and that are linked to the introduction of Energy Management Systems are aimed at large companies, although they can also apply to SMEs.

This lack of obligation for SMEs to reduce their energy consumption and accordingly their CO_2 emissions may be part of the reason why Germany was not on track to reach its 2020 emission reduction targets until COVID-19 struck.

Existing regulation and obligations for SMEs
Though there is no law that addresses energy efficiency in SMEs directly, there are a number of laws and regulation that are energy related. They therefore effect the

way energy is used in SMEs, and they thus have an effect on the energy efficiency in SMEs. The most important law is:

Energie-Einspar-Verordnung (EnEV) (Energy Savings Directive)
This directive defines energy efficiency standards of buildings and of installations related to buildings, especially to heating and warm water. If the SME is owner of a building, the building will have to correspond to this directive. It is updated every few years, and in the past, the regulation has regularly become stricter, although a difference is being made between existing buildings and newly constructed buildings.

Furthermore, there are two laws that provide compensation or tax breaks for companies that have a large consumption of energy, linked to the obligation to install an energy management system. While in practice this will mostly apply to large companies, SMEs can apply here too. There are:

- *Renewable energy law (Erneuerbare Energien Gesetz - EEG):* All companies have to pay an "EEG-Umlage" (EEG-participation), proportional to consumption. In order not to penalise companies that consume a lot of electricity and operate internationally (and thus guarantee their competitiveness), the law provides compensation for companies proving that their electricity consumption in the last fully accounted year was more than 1 gigawatt hour. Furthermore, as part of the Renewable energy law, the "special compensation regulation (besondere Ausgleichsregelung, § 63 EEG)" provides that companies working in the manufacturing sector will receive a reduction of their contribution to the support of renewable energy sources if they prove that their electricity consumption in the last fully accounted year was more than 1 gigawatt hour. Furthermore, their relative level of consumption has to correspond to that of their sector. These companies have to have a certified Energy Management System according to ISO 50001 or an EMAS (Eco Management and Audit Scheme, European voluntary environmental management instrument) registration in order to qualify for this compensation.
- *Spitzenausgleich-Effizienzsystemverordnung (SpaEfV)* (untranslatable, roughly: Regulation on compensation of peaks based on an efficiency system): This regulation provides that companies from sectors with a high level of energy consumption can apply for a reduction of their energy tax if they can prove that they have a certified Energy Management System according to ISO 50001, an Environmental Management system or an alternative system for improving energy efficiency which corresponds to an ISO 50001 EMS in place.

Existing incentives
The approach of the German government to improve energy efficiency in SMEs is to motivate them to act and supporting them, instead of obliging them. To our knowledge, there is no sector that has introduced a self-obligation to reduce their energy consumption, although for example, the DEHOGA (Association of enterprises in the field of hotel and gastronomy) runs a campaign amongst its members in the hotel

and gastronomy sector to improve their energy efficiency and also offers energy consultation. This campaign is not linked to specific energy consumption reduction targets.

While there are no direct financial incentives for SMEs to improve energy efficiency (these are aimed at large companies), there is a number of funding programmes for energy efficiency measures on the federal level, and even more in the different regions of the country. These funding programmes support energy audits, designing of measures as well as the implementation of energy efficiency measures. On the federal level, most programmes are run either by the Federal Office for Economic Affairs and Export Control (BAFA) or by the Kreditanstalt für Wiederaufbau (KfW), a public bank providing loans on behalf of the Government.

Furthermore, numerous campaigns are run to motivate SMEs to improve their energy efficiency. On the national level, there are two campaigns especially noteworthy:

- *Initiative Energieeffizienznetzwerke* (further in the text as Initiative of Energy Efficiency Networks): This network is funded by the Federal Ministry for Economics and supports local energy efficiency networks.
- *Mittelstandsinitiative Energiewende und Klimaschutz* (further in the text as SME Initiative Energy Transition and Climate Protection): This campaign is run by a cooperation of the German Association of Chambers of Commerce and Industry (DIHK), the German Confederation of Skilled Crafts (ZDH), the Federal Ministry for Economics and the Federal Ministry for Environment, Nature Conservation, and Nuclear Safety. It offers a wide range of information, vocational training and consultations for SMEs on energy efficiency.

Both campaigns are thus aimed at motivating SMEs to improve their energy efficiency and support them in their activities, but do not offer direct financial support. Both have been described in detail in Task 2.1.

Description of a successful policy, regulation or incentive in detail

The concept of energy efficiency networks has proved to be successful in reducing energy consumption in companies. The initiative of Energy Efficiency Networks, , has brought together energy efficiency networks, supports the initiation and running of local energy efficiency networks by defining certain minimum standards as well as offering advice and support on how to initiate and run an energy efficiency network. It furthermore supports the exchange between the different local energy efficiency networks (e.g. by organising an annual conference), and has installed a thorough monitoring and evaluation system that monitors the structure and the success of participating energy efficiency networks and the savings achieved in the participating companies. While the concept of energy efficiency networks existed already for some time before, this initiative was set-up in 2014.

The approach to motivate SMEs to act on energy efficiency together corresponds to the approach of the GEAR@SME project.

8.1.2 Funding schemes

Existing funding schemes with regard to energy efficiency in SMEs
The funding opportunities at the federal level cover a wide range of energy efficiency related topics. They range from supporting energy consultation, supporting all kinds of energy efficiency measures to supporting the introduction of Energy Management Systems in SMEs. The funding is available either directly from the Federal Ministry for Economy Affairs, or through the KfW (state owned *Kreditanstalt für Wiederaufbau* / Credit Institute for Reconstruction) or the Federal Office for Economic Affairs and Export Control (BAFA), which administer the programmes on behalf of the Federal Ministry for Economy. The most important funding opportunities are the following:

- Energieberatung Mittelstand / *Consultation on Energy in SMEs* (by the BAFA): Funding for energy audits and design of simple measures in SMEs, conducted by a registered energy consultant. Dependent on their annual energy cost of the SME, 80% or maximum 6.000 Euro of the fee for the energy consultation in the SME are covered by the programme. The amount of funding depends on annual energy consumption. In 2019, 3.643 SMEs applied for funding under this programme.
- "Energie effizient bauen und sanieren" (by the KfW): Loan for constructing or renovation of energy-efficient buildings, or individual measures improving the energy efficiency of buildings. The KfW will offer an interest rate for the loan under market conditions. Furthermore, a part of the loan will not have to be paid back - depending on the type of measure and the level of energy efficiency reached, this varies between 5% and 27,5% of the loan.
- Investments to improve the energy efficiency
    - By the installations and processes of waste heat recovery, installations for heating and cooling, as well as aeration, if they are used directly in the manufacturing process. SMEs are funded with up to 40 % (max 700 Euro per ton CO_2 saved) of the investment.
    - By the integration of process heat from renewable energy sources (up to 45% of the investments necessary, to a maximum of 3.5 million Euro).
    - By implementing high efficient cross-sectoral-technologies (for SMEs up to 40% of the investments),

- Investments in systems for measurement and control and sensoric technology to be used for an Energy Management System in an enterprise are funded. Furthermore, investments in EMS software and training of the employees is also funded. SMEs receive funding of 40% of the investment.
- „Förderwettbewerb Energieeffizienz" (Competition for funding in the field of energy effiency): This funding programme has an innovative approach. Here,

a measure can be proposed, and funding is provided for those applications that promise to have the best ratio of Euros invested and CO_2 saved. Funding can cover up to 50% of the investment. Eligible are investments in the energetic optimisation of industrial or commercial installations and processes. This includes the integration of highly efficient technologies, the implementation of measures to increase the efficiency of electricity or heat use, the integration of waste heat recovery or the generation of process heat from renewable energy sources.

In most of these programmes, in order to obtain funding, the efficiency of the measures has to be documented and confirmed. Thus, for the individual SME, the funding is linked to an efficiency target. Overall though, there is no specific reduction objective linked to each programme, while it can be assumed that the government has an expectation of the effect the different funding schemes will have on CO_2 emissions.

If numbers are available, they show that the programmes are used, though not enough, considering the number of SMEs and the potential for energy savings (*Antwort Der Bundesregierung*, 2020). Therefore, it cannot be said that the funding schemes have a large impact on the energy efficiency in SMEs. There is no information available why SMEs do not use these programmes. Anecdotal evidence suggests a number of reasons:

- The SMEs not being aware of these funding possibilities (this is confirmed by an evaluation on the funding scheme for cross-sectional technologies from 2016) (Dena, 2017).
- energy efficiency not being tackled in the SMEs
- funding is perceived to be too linked to too much administration (the evaluation above suggests that in practice this is not the case - 90% of the SMEs said that they were satisfied with the funding scheme).

Accessibility of funding

The application procedures and administrative requirements seem reasonable, although sometimes it takes (too) long to get the application approved.. Nevertheless, there are SMEs that complain about the bureaucracy involved in applying for funding. It is hard to tell if this is based on experience or if it is due to an expectation on the side of the SMEs that funding should be made available very easily, and thus without much control of the use of the money.

Best-practice example for other countries

Of the funding schemes described above, the energy consultation for SMEs is the one that stands out. It offers SMEs an easy entry into the topic of energy efficiency, as it offers an overview of the energetic situation in the SME by an approved energy consultant, with recommended simple measures. The investment of the SME for this initial consultation will normally be under 2.000 Euro, and the application procedure is rather simple.

It is a mostly standardised consultation, in which the energy consultation will visit the SME and evaluate the energy consumption. In a standardized report, the SME will receive an assessment of its energy consumption and recommendations where it could improve its energy efficiency.

One point that could be improved in this programme is the follow-up to the report. Once the SME has received the report, it is up to them to tackle the measures. Often, the SME is not sure how to take this on, or other things take priority, so that the measures recommended are not implemented. Therefore, to achieve a maximum from such an initial energy consultation, it could be considered to include a follow-up module in such a funding scheme, which supports the SME in the implementation of measures.

Correspondence of funding schemes to the GEAR@SME approach
The funding opportunities described all address individual SMEs. They are therefore not directly fitting to the GEAR@SME approach, but can nevertheless support the activities of the project, as they can be used to motivate SMEs to take up the issue of energy efficiency.

It can be assumed that even if the SMEs approach energy efficiency in a joint effort, most measures will be implemented in the respective SMEs, and only few measures will be implemented across several SMEs. Therefore, the funding schemes described above will cover a range of the measures that the SMEs will most likely come up with at the end of the GEAR@SME-process. Especially noteworthy is the funding scheme for energy consultation, as this offers the SME an overview of their energetic situation and issues to tackle.

As for the process as such, both the Initiative of Energy Efficiency Networks and the SME Initiative Energy Transition and Climate Protection can provide useful support for SMEs tackling energy efficiency in a joint effort by SMEs. Therefore, although not every step and probably not all measures that will be identified are covered by funding schemes, the GEAR@SME approach and the SMEs that will be involved in the project should find support from the named initiatives and funding opportunities.

8.2 Italy

8.2.1 Policies

Existing policies with regard to energy efficiency in SMEs
The business sector is of particular importance in the definition of energy policies at a national level, both because of the number and size of companies present in the various primary, secondary, and tertiary sectors and because of the amount of energy consumed.

To ensure the achievement of the EU 2030 energy and climate targets contained in the Clean Energy package, Italy, according to the European Regulation on Energy Governance (Regulation (EU) 2018/1999) sent the Commission its Integrated National Energy and Climate Plan - PNIEC for the years 2021-2030. The PNIEC, which is based on existing national strategies and plans, such as Italy's National Energy Strategy (SEN) adopted in November 2017, absorbs the previous programming documents.

European Delegation Act 2018 (Law No 117/2019) contains the delegation of powers to the Government for the implementation of Directive (EU) 2018/844 on the energy performance of buildings. The Legislative Decree transposing the EU Directive 2018/2002 on energy efficiency is in the process of being adopted.

Measures have been taken to continue and complement the objectives achieved: the measures on energy efficiency in the building stock (to refurbish Italian building stock with the aim of reaching and exceeding the minimum requirements set by current legislation also for existing buildings), the so-called 'Ecobonus', were extended for 2020 with Budget Law (Law 160/2019) as well as further reinforced by Decree Law No 34/2020.

Integrated National Plan for Energy and Climate (PNIEC 2021-2030)

The Integrated National Plan for Energy and Climate (PNIEC) aims to implement a new energy policy that ensures full environmental, social, and economic sustainability of the national territory and accompanies this transition. PNIEC will bring a cumulative reduction of final energy consumption over the period 2021-2030 estimated to be approximately 2.75 Mtoe. The Plan envisages a target of primary and final energy consumption equal to 132 Mtoe and 103.8 Mtoe respectively in 2030. To reach this target, PNIEC foresees a goal of reducing final consumption by 0.8% per year in the period 2021-2030 calculated based on final energy consumption for the three-year period 2016-2018 equal to 116.9 Mtoe. The target percentage of 0.8% per year represents an annual incremental savings target of 0.935 Mtoe over the period 2021-2030.

A recent document (January 2020) indicates that the total contribution of the measure for the period 2020-2030 will be about 4.09 Mtoe of final energy in cumulative value.

In order to achieve the cumulative final energy savings to be achieved in the period 2021-2030 in accordance with Article 7 of the Energy Efficiency Directive (EED), confirmed at 51.4 Mtoe compared to 50.98 Mtoe calculated on the basis of average final energy consumption in the three-year period 2016-2018, Italy will make use of the mandatory scheme based on White Certificates (CB - Certificati Bianchi) and a set of alternative measures already in place, which will be reviewed and strengthened in the coming years in order to ensure the achievement of the set objectives. In order

to achieve improved effectiveness in existing support schemes, the focus has been on promoting greater specialisation of instruments by sectors and interventions in order to eliminate overlaps and competitiveness between measures, concentrate resources, facilitate access, and maximise savings. In particular, there are several instruments expressly dedicated to the promotion of energy efficiency in force and monitored in order to achieve the savings target set out in Article 7 of the EED, some of which can be used by SMEs:

- The White Certificates scheme
- tax deductions for energy efficiency measures and the recovery of the existing building stock
- The Thermal Account
- The National Fund for Energy Efficiency.

Guidelines for Energy Audits in SMEs

The potential for energy efficiency in SMEs is still very large, as also evidenced by art. 8 of the European Directive 2012-27-EU on Energy Efficiency, where, in comma 2, the Commission requires Member States to develop specific programmes to encourage SMEs to undergo energy audits and, subsequently, to promote the implementation of the recommendations resulting from these audits.

Despite the significant extent of this potential, its full implementation is still hampered by several barriers such as the lack of know-how of the incentive for the implementation of energy improvement actions identified by energy audits in SMEs. Moreover, the same barriers often prevent SMEs from gaining easy access to the energy services market.

In order to overcome some technical barriers to the implementation of energy efficiency actions in SMEs, as the lack of standardized documents for applications, in 2020 ENEA prepared Guidelines for the Energy Audit of Small and Medium Enterprises ("Linee Guida per la Diagnosi Energetica nelle Piccole e Medie Imprese"). The document provides information on the collection and processing of data and the drafting of the energy audit report, the consumption monitoring plan and energy efficiency measures for SMEs that are not subject to the requirements of Legislative Decree no. 102 of 4 July 2014. The aim of the document is to provide a useful tool for the SMEs, through which it is possible to formulate requests to a potential energy auditor on time and evaluate his work, verifying the validity of the final report.

Existing regulations and obligations for SMEs

Energy audit for SMEs: The Legislative Decree no. 73/2020

The high number of energy audits carried out is expected to increase further as a result of the actions taken by the Ministry of Economic Development (MiSE) in terms

of verification and control, and the forwarding to the same database of the energy audits of SMEs that adhere to the regional calls for tenders. The regional calls for tenders were activated following the Decree of 12 May 2015 of the MiSE and the Ministry of the Environment and Land and Sea, thanks to which the procedure aimed at favouring small and medium-sized enterprises in the implementation of energy efficiency improvement was launched. €15 million were made available in 2015, for the co-financing of regional programmes to encourage energy audits in SMEs or the adoption of energy management systems compliant with ISO 50001 standards. The Regions in turn make another €15 million available, and the total funding covers 50% of the costs of carrying out energy audits. It is estimated that no less than 15,000 SMEs per year will be able to be involved in this initiative and that as many energy efficiency projects will result from energy audits. The initiative is renewed annually with similar resources until 2020.

In order to promote the improvement of energy efficiency in SMEs, Legislative Decree no. 73/2020 (Implementation of Directive (EU) 2018/2002 amending Directive (EU) 2012/27 on energy efficiency) entered into force on 29 July 2020. This law provides, by 31 December 2021 and then every two years until 2030, for the issuing of public calls for tenders for the financing of the implementation of energy management systems compliant with the ISO 50001 standard by the MiSE with the support of the GSE and after consulting the Conference of Regions.

The public calls for tender define the available resources, the implementation modalities of the above-mentioned financing and the monitoring of the results obtained. The budget for this measure is limited to a maximum of €15 million for each of the years from 2021 to 2030.

By January 31, 2021, for each of the years from 2021 to 2030, ENEA elaborates and submits to the Ministry of Economic Development for approval an annual programme of awareness raising and assistance to SMEs for the execution of the energy audits at its production sites and for the implementation of the energy efficiency actions proposed in the audits.

By the end of 2017 ENEA had received 15,460 audits relating to 8686 enterprises (of which over 45% were carried out in the manufacturing sector and over 10% in trade, where the consumption of large-scale retail chains is accounted for). This number is set to grow because of monitoring and checks carried out by the MiSE, and the entry in the same database of audits performed on SMEs participating in regional calls. The potential energy saving deriving from interventions with pay back times equal to a maximum of 3 years is approximately 0.78 Mtoe/year of which 0.6 Mtoe/year derives from the manufacturing sector.

Energy Manager Appointment

According to Art. 19 of Law 10/91, some industrial companies are obliged to appoint an "Energy Manager" who is responsible for verifying energy end use and putting measures in place for improvements. The Energy Manager shall be appointed each year by April 30. In particular, the mandatory subjects are:

- Companies operating in the industrial sector, that, in the previous year, used more than 10 ktoe (primary energy), summing up all energy sources
- Companies, in the civil (residential), tertiary and transport sectors, that in the previous year used more than 1 ktoe (primary energy), summing up all energy sources.

There is a national register of Energy Managers kept by FIRE (Italian Federation for energy efficiency). Companies not subject to this requirement can also decide on a voluntary basis to appoint an Energy Manager, to optimize their consumption.

A recent FIRE report on energy managers in Italian shows that among those who voluntarily appoint an energy manager (including SMEs), companies in the industrial sector, particularly manufacturing, are in first place, with 15% of the appointments.

Energy audits Decree (Legislative Decree n. 102/2014)

In line with article 8 in the EED, some companies are obliged to perform an energy audit every four years. Apart from the mandatory large companies, Italy also requires energy-intensive manufacturing companies with more than 1 GWh of electricity consumption per year and an annual cost of energy that is more than 2% of the revenues of the company to also perform energy audits every four years.

In general, SMEs are not obliged to carry out energy audits, which is a legislative obstacle to the development of important levels of energy efficiency in SMEs together with the lack of support to SMEs in implementing energy efficiency solutions.

Companies with high energy intensity (energy-intensive companies) and with some NACE code, which, however demonstrate a specific level of energy efficiency are entitled to a discount on some components of system charges in their electricity bills, based on their energy intensity, calculated as the share of electricity costs over the gross value added (GVA). Moreover, the energy use threshold of GWh has been reduced from 2.4 GWh to 1GWh in order to include SMEs in the system.

Energy-intensive companies (also SMEs) as defined in the Ministerial Decree of 21 December 2017 registered for the first time in the CSEA (Cassa per i Servizi Energetici e Ambientali) list for 2020, which are included in the 2019-2020 energy intensive lists, are required to have an energy audit by 5 December 2020.

The obligation to undertake energy audits every four years introduced by Legislative Decree 102, 2014 has resulted in an increase in awareness regarding the energy consumption of companies. Whilst the Energy Efficiency Directive only requires large

companies (i.e., not SMEs) to undertake energy audits, in Italy, Legislative Decree 102 expanded the definition of a 'large company' to also include energy intensive companies, regardless of the number of employees or turnover. This means that several SMEs are obligated to undertake energy audits in Italy.

Existing incentives

Several instruments were identified providing public funding for energy efficiency in Italy. The available public funding concerns different types of policy instruments: grants and subsidies, loans, fiscal measures, etc.

White Certificates (CB)

In Italy, the main mechanism to support energy efficiency for industry is the "White Certificates Mechanism". In the transposition of the 2012/27/EU directive (Legislative Decree 4 July2014 n. 102) the CB scheme is addressed as the policy measure to implement art. 7, and it is expected to give a contribution to 60% of the national target in 2020. As far as industry is concerned, first the SEN (Strategia Energetica Nazionale = National Energy Strategy) and now the PNIEC aim to strengthen and simplify the obligation scheme of CB, and to continue promoting energy efficiency in SMEs through calls for co-financing of energy audits and management systems.

CB (also called "Certificati Bianchi" or "Titoli di Efficienza Energetica," TEE) is an Energy Efficiency Obligation scheme (EEO), with a tradable market, and works both as an EEO and as incentive scheme for voluntary parties due to the presence of a market to trade CB. An EEO sets a mandatory energy-saving target that energy market actors have to meet by implementing energy-efficiency measures in predefined end-use sectors over a given period of time. When achieved energy savings are credited CB by an independent authority and the system is combined with a trading option, such EEO mechanisms are called "White Certificate schemes".

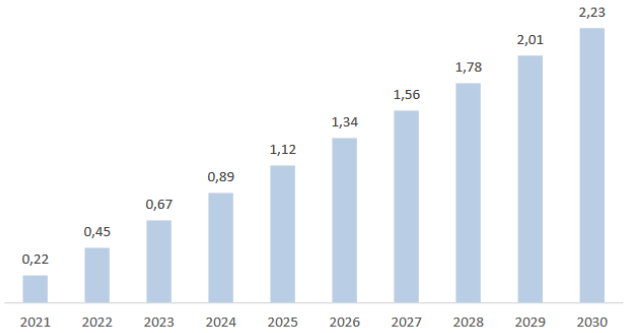
The system rests on the obligation for electricity and gas distributors (DSOs) with more than 50,000 end-users to generate a specific amount of savings each year or, alternatively, to purchase an equivalent number of certificates.

CB are used to certify the achievement of energy saving in the final uses of energy, through energy efficiency measures and projects. The economic value of the certificates (originally set at 100 €/TEE) varies depending on the cost of energy and is a function of market trends.

The CB Decree (Ministerial Decree 10 July 2018) published guidelines to support the CB mechanism that was approved in April 2019. The approved guidelines are made up of two parts. The first part consists of Annex 1 with the objective of promoting the identification and definition of projects under the mechanism of CB. The second part, the Annex2, identifies the types of eligible energy efficiency projects. Within Annex 1,

part two describes the production processes of six distinct production sectors (glassware, plastics processing, ceramics, production of thermal and cooling energy, the integrated water service) presenting the technologies used in the production process and energy efficiency measures achievable in each sector. Part three presents a non-exhaustive list of ineligible energy efficiency measures

The first review of the scheme was done in the Italian National Energy Strategy (2013), which assigned CB the task of covering about one-third of the new energy savings that needed to be achieved by 2020. Since the start of the CB mechanism in 2005, overall additional primary energy savings of approximately 1,000 petajoules (PJ) have been certified and more than 47.5 million white certificates have been issued. The annual amount of CB issued in 2017 amounts to approximately 5.8 million white certificates (TEE), a level similar to that of the two-year period 2012-2013, but far from the peak of over 7.5 million observed in 2014. The volume of certified savings in 2017, equal to about 80 PJ, was practically unchanged compared to 2016, but far from the over 125 PJ recorded in the period 2010-2012.



Annual final energy savings expected from new interventions promoted with the White Certificates mechanism (Mtoe).

In terms of investments put in place to generate these savings, it is estimated that about €111.2 billion will be spent in the period 2021-2030, against a commitment of €5.6 billion for the State, due to the promotion of the interventions carried out.

The third revision was in April 2017, which defined the energy savings targets for the years 2017-2020.The most important change is the abolition of the durability coefficient “tau” which provided an incentive for projects with long technical life particularly in the industrial sector. However, the minimum thresholds for eligibility of a project are lowered considerably (from 20 toe/year to 5toe/year) and the duration of the incentive payment was changed to between 7 and 10 years (compared to 5 to 8).

Expected evolutionary lines: the process of updating and strengthening the CB will continue with a view to simplifying and optimising the methods for quantifying and recognising energy savings, reducing the time taken to approve, issue and offer securities on the market. These aspects are considered fundamental for the effective continuation of the measure in the period 2021-2030. Finally, the possibility of implementing a thorough reform of the mechanism is also being considered.

National Fund for Energy Efficiency

The National Fund for Energy Efficiency ("Fondo Nazionale per l'Efficienza Energetica") is a mechanism developed by the MiSE. The Fund provides incentives to public authorities and businesses, granting soft loans and guaranteeing financing operations for measures that help meet the national energy efficiency targets. It was established by the Legislative Decree n. 102/2014 by the MiSE and is regulated by the decree 22nd December 2017.

The Fund is a rotary incentive aiming to achieve the EU's energy efficiency policy objectives and promote the energy efficiency measures carried out by companies (also SMEs), energy service companies (ESCOs) and Public Administration.

The interventions supported by the Fund are as follows:

- Energy efficiency in industrial processes
- District heating network construction or upgrade
- Energy efficiency for public services and infrastructures, including street lighting
- Building retrofitting.

The Fund's budget is €185 million, to which will be added resources of approximately €125 million between 2019 and 2020. The Fund will reach €310 million at December 2020 and may be increased with voluntary payments by other central and regional administrations, organizations, and public bodies. It is estimated that the Fund will mobilize over €1.7 billion in investments in the efficiency sector and will have a leverage effect of around €5.5 billion with the creation of jobs and opportunity for the whole value chain.

Among the recipients of the benefits are companies (in single or associated/aggregated form such as Consortia, Network Contracts and Temporary Business Associations). For companies (and also SMEs), the fund provides grants:

- for improving the efficiency of processes and services, including buildings
- for installing or upgrading of district heating and cooling networks or plants.

For ESCOs, the fund provides grants for improving the energy efficiency of the services and/or public infrastructure, including public lighting; improving energy efficiency of buildings intended for residential use, specifically with regard to social housing; as well as improving energy efficiency of the buildings owned by the Public Administration.

For companies and ESCOs the facilities are granted in the form of financing and/or guarantees.

The first 10 projects to be financed by the Fund were approved in February 2020. The approved projects involve investments of more than €14 million, with the Fund

putting up €7.4 millions of this amount. These projects relate to upgrading the energy efficiency of buildings, extending district heating networks and making public lighting networks more efficient. In April 2020, a further 7 projects were approved, for which €3.8 million was granted for planned investments amounting to approximately €5.4 million.

Conto Termico (Renewable Energy for Heating and Cooling Support Scheme)

The "Conto Termico" is a subsidy, regulated by Ministerial Decree 28/12/2012 and then updated with Ministerial Decree 16/2/2016 ("Conto Termico 2.0") and Ministerial Decree 186/2017, the purpose of which is to incentivize the adoption of small thermal energy efficiency measures (EEM) and renewable energy systems. There are different incentivized interventions, depending on the type of subject (public bodies or private companies).

For industrial companies, the admissible EEMs are:

- Heat pump installation to replace a pre-existing traditional heating system
- Biomass boiler and stove installation to replace a pre-existing traditional heating system
- New installation of solar thermal systems
- Heat pump water boiler installation to replace a pre-electric boiler
- Installation of a solar hybrid system with heat pump to replace a pre-existing traditional heating system.

The subsidy can be up to 65% of the investment costs, which is reduced however to a list of recognized expenses for each type of intervention. The subsidy is given in one solution if it is below €5,000, otherwise, it is split in two to five yearly instalments. For public bodies, more types of energy efficiency measures are incentivized.

In 2019, the Conto Termico mechanism continued the growth seen since 2017 in terms of energy efficiency measures promoted. In 2019, €285.1 millions of direct access incentives were granted, or around 50% more than the previous year. The number of works relating to energy efficiency and renewable sources (RES) in question was 113,658. This is higher than the number of contract requests activated (111,534) owing to the existence of so-called 'multi-measure' requests involving several measures being implemented at the same time. In terms of the types of measures receiving support, there continues to be more focus on those involving the installation of renewable thermal systems with high energy and environmental performance (biomass, solar and heat pumps) which can be accessed by the private sector and public administrations, while for the remainder, which is more specifically targeted at energy efficiency measures on public administration buildings, priority is given to building envelope insulation, window replacement and condensation boilers. The estimate of the final consumption savings generated by the new measures supported by the Conto

Termico in 2019 is 89 ktoe. Taking into account the annual savings achieved by the measures incentivised in previous years by retracing the entire time series of measures, the total amount of savings up to and including 2019 is 0.19 Mtoe, with a growing trend of new annual savings.

Ecobonus (tax relief)

The energy renovation projects in existing buildings, which reduce environmental impact by decreasing consumption and, consequently, energy bill costs, are encouraged through the tax credits introduced in the Financial Legislation 296/2006, commonly known as the Ecobonus.

For the SMEs benefit consists of tax deductions from IRES (corporate income tax) of 65% of the expenses incurred for energy requalification of buildings and heating systems.

This tax incentive is “non-structural,” meaning that it needs to be reconfirmed each year. The latest Budget Law has in fact extended the tax breaks set out in 2019 at residential level for the duration of 2020 and has confirmed those already in existence for projects involving the common parts of apartment buildings, which will run until 31 December 2021.

The Ecobonus enables those liable to pay IRES to obtain a tax credit, the value of which is a variable percentage of the costs incurred for the energy efficiency project on an existing building. The tax credit is divided into 10 equal-sized annual parts, or, alternatively, it can be transferred in a single solution in the form of a partial payment to the company that carries out the energy renovation work. If the latter option is selected, then it is possible to benefit immediately and entirely from the incentive through a mechanism called "immediate discount on invoice"

Holders of business income (and therefore also SMEs) may benefit from the deduction only with reference to the instrumental buildings used by them in the exercise of their entrepreneurial activity.

Obligations and incentives that apply only to certain sectors

Energy Intensive Companies scheme (Ministerial Decree 21 December 2017)

Following the reform of the Energy Intensive Companies Scheme in October 2018, 3,651 companies had submitted their application to register to access the incentives provided to energy-intensive companies.

In order to access the incentive, companies must demonstrate that they have achieved a minimum level of energy efficiency (developed by ENEA for each sector). The costs for electricity are calculated by multiplying energy consumption by the presumed price of electricity. Eligible energy consumption, as of 1 January 2019, is calculated on the

basis of energy efficiency parameters developed by ENEA. In order to obtain the incentive, it is therefore necessary to fall within a certain level of energy efficiency.

Most of these companies are SMEs, which are expected to benefit from savings in electricity bills of approximately 15%. The amendment of the legislation concerning energy-intensive companies introduced with the decree of 21 December 2017 has had relevant consequences on the ESCOs. The impact of the new decree was in fact negative for ESCOs, as it limited the willingness of managers of energy-intensive companies to make their company more efficient. The legislation has indeed reduced the implementation of both energy efficiency measures on production processes and auxiliary services and reduced the willingness to adopt self-consumption measures concerning for example co-generation, since it has increased the overall Pay Back Time.

Self-obligations / self-regulatory mechanisms
Non-energy intensive SMEs are not required to carry out the energy audit, except on a voluntary basis. Among other things, the CB certify the achievement of energy end-use savings through interventions and projects to increase energy efficiency. If the energy audit highlights areas where energy efficiency can be made, then carrying out targeted and certified interventions, this virtuous process allows access to the CB incentive mechanism.

The barriers that have so far limited the development of energy audit: the lack of a culture of energy efficiency and bureaucracy.

Incentives / obligations / self-obligations linked to specific targets
Italy is obliged, pursuant to Article 7 of Directive 2012/27/EU, to achieve a minimum cumulative energy saving target of 25.5 Mtoe of final energy, to be achieved in the period 2014-2020, through the above-mentioned incentive measures (CB, which participate in the reduction targets for about 60%, Ecobonus, Conto Termico). As for the achievement of the 2020 objectives, it will be pursued mainly through the mechanism of CB, Ecobonus enhanced with the recent Legislative Decree no. 34/2020 (so-called Relaunch Decree) and finally Conto Termico.

Assessment of obligations, incentives and self-obligations

Achievement of national energy savings targets (also including the industrial sector and SMEs)
From 2011 to 2018 energy savings achieved through energy efficiency measures amounted to 10.4 Mtoe/year of final energy, 67% of the 2020 target set by the National Energy Efficiency Action Plan (NEEAP) and the National Energy Strategy (SEN). These savings derive more than 50% from CB and tax relief in almost equal parts. At a sectoral level, the residential sector has already largely exceeded the expected target by 2020; industry and transport are halfway through the target. Overall,

just over two-thirds of the 2020 target has been achieved. All the measures adopted in the efficiency sector since 2011 have led to savings of two billion seven hundred million euros in 2018 due to lower natural gas imports, avoiding emissions of around 39 million tonnes of CO_2 compared to 2005.

White Certificates

Since the start of the CB mechanism, overall additional primary energy savings of approximately 25.7 Mtoe have been certified and more than 47.5 million CB have been issued. The annual amount of the CB issued in 2017 amounts to approximately 5.8 million, a level similar to that of the two-year period 2012-2013, but far from the peak of over 7.5 million observed in 2014. The volume of certified savings in 2017, equal to about 2 Mtoe, was practically unchanged compared to 2016, but far from the over 3 Mtoe recorded in the period 2010-2012. About the energy savings generated in 2017 by projects started from 2005: projects started with standard sheets (ex-ante estimation based on predefined algorithms), analytical and final balance sheets (ex-post measure) have saved about 5.9 Mtoe/year of primary energy (equivalent to just over 5 Mtoe/year of final energy).

Tax relief

With regard to tax relief for upgrading the energy efficiency of buildings (Ecobonus), in the four years 2014-2017 approximately one and a half million projects were carried out, including more than 420,000 in 2017, with more than half of them involving the replacement of windows and shutters and 20% the replacement of heating systems. Since 2011, over 2.3 million projects have been carried out: over 3.3 million since the start of the mechanism in 2007. According to the different types of projects carried out the trend of the energy savings obtained is positive, with 0.112 Mtoe/year obtained in 2017. During the considered period, energy savings amounted to just over 0.4 Mtoe/year and starting from 2011 the energy savings achieved amounted to 0.77 Mtoe/year. Since the start of the mechanism in 2007, total savings amount to 1.31 Mtoe/year. Total savings achieved in the period 2014-2017 (net of the savings already counted with the CB and Conto Termico for projects of the same type): overall, primary, and final energy savings amounted to 1.164 Mtoe/year. Over the period 2011-2017 savings rose to about 2.13 Mtoe/year. As of early April 2020, around 318,000 cases of tax relief for the energy upgrading of existing residential buildings had been notified to ENEA for 2019. Total of approximately €3.4 billion of investments made, following which total savings of approximately 0.106 Mtoe/year of final energy were achieved.

Conto Termico

In 2017 the support scheme showed a clear acceleration, for that year alone generating requests equal to 130% of all those received in the period 2013-2016: over 43,000 (+189% compared to 2016), which correspond to incentives equal to 183 million euros (+168% compared to 2016). There was also a significant increase in

requests for the "reservation" type of access by the public administration (from 141 requests in 2016 to 333 in 2017), for almost 62 million euros.

Cost-effectiveness of incentive mechanisms for energy efficiency

In preparing the overall analysis of costs and savings of the various mechanisms, account is taken of the cumulative amount over time of: economic savings due to lower energy procurements; excise duties on electricity and natural gas; amount of the Ecobonus tax relief; incentives granted for CB, the feed-in tariff for photovoltaic systems, incentives for other electric RES; expenditure for investments in efficient components/plants (hypothesis that the projects have a return time of two years in the case of White Certificates); business turnover; system charges; tax and contributory income (IRES, IRPEF, social security contributions, VAT, etc.). A preliminary analysis shows that energy efficiency mechanisms have a better cost effectiveness than RES, as evidenced by the cost incurred by the actors involved for each kWh saved: c€2.9 for CB and c€8.6 for the Ecobonus, compared with c€32 for RES electric sources.

Despite the success of the measure, two problems that the government should take into consideration have been identified. Firstly, the cost of renovating residential buildings remains considerably higher than the typical levels in the industrial sector, although the savings are the same: the cost-effectiveness ratio of tax deductions and energy bills is up to eight times higher than with the CB mechanism.

Where energy efficiency incentive systems overlap, a more consistent incentive can be achieved by excluding technologies that would otherwise receive a double incentive. Over the years the Italian system went through three major reviews aimed to harmonise the regulatory framework, during these reviews project types subject to other incentive measures were excluded, to try to create a fairer incentive landscape.

Description of a successful policy, regulation or incentive in detail

Despite the economic crisis, the impact of the industry sector share on the total primary energy demand in Italy is still significant. The certification of companies according to the standard ISO 50001:2011 (Energy management systems, EnMS) and the application of energy audits (UNI ISO 16247) can represent the key elements in the achievement of objectives set in the 20-20-20 Climate-Energy Package.

Italy, one of the leading countries in energy efficiency policies, suffers from a significant delay in the implementation of the EnMS in industry with respect to others European countries like, for example, Germany. With more than 15.000 energy audits performed by more than 8.000 companies, Italy continues to be at the top among the virtuous countries in the EU to actuate the energy audits in large enterprises and energy consuming companies as required by the Energy Efficiency Directive.

The Italian model could unlock the great energy efficiency potential in the country's SMEs too: energy audits are mandatory for large companies, but the Italian Government requires them for SMEs as well in some specific cases.

Regional tenders have been published, for SMEs (fund 100% energy audits and in part energy efficiency interventions at 30-70%), and there was great participation by SMEs.

New data presented in the Energy Efficiency Annual Report 2019 published by ENEA, confirms how the energy audits model continues to be successful in Italy. 2016 data reveals that 20% of the total energy audits received were performed by SMEs and shows that potential savings between 0,8 Mtoe and 1,1 Mtoe could be achieved with a payback period equal or less than three to five years, respectively. According to ENEA, a total of 15.154 energy audits were received as of December 2016, increasing by around 8% from the 2015 data. Among the enterprises obliged to undergo energy audits, around 65% of the energy audits received were performed by large enterprises, while 30% by energy consuming companies, of which 20% SMEs and 10% large enterprises. About 2% were done by enterprises with ISO 50001, and approximately 3% were done on a voluntary basis by enterprises, municipalities, and consortia.

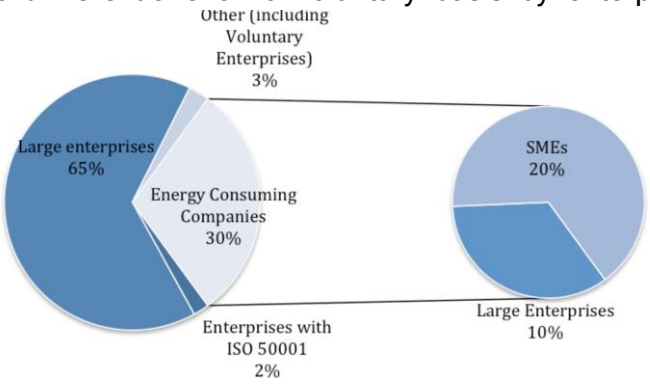


Figure 10 Percentages of enterprises performing energy audits, either voluntary or required by law.

The secret of the Italian success is to find in the innovative approach that includes a mix of best practices. The result is a "cocktail" of these best practices that lead to success, where the main ingredients can be identified as technical, financial, and communication and awareness.

Overseen by ENEA, the technical ingredient includes Permanent Technical Tables, Standardized Accountability Systems, and Sectoral Guidelines along with Specific Procedure for Multi-Site Companies. ENEA created several Permanent Technical Tables with the interested parties (experts in the sector, stakeholders, ESCO and trade association) to identify effective, efficient, and shared solutions, in line with the Legislative Decree 102/2014. The Technical Tables delivered a series of proposals that were adopted by the MiSE respectively in May and October 2015, and November

2016. Moreover, this approach increased awareness among enterprises to meet the deadline for the presentation of the documentation.

ENEA carried out also a National campaign to stimulate energy efficiency: the first objective was to increase awareness and encourage large enterprises and SMEs to perform energy audits and to use the available incentives to install energy efficient technologies and to install monitoring systems to help enterprises to evaluate in a better way energy consumption.

Correspondence of policies, objectives and incentives to the GEAR@SME approach
Among the instruments that are considered to be somehow related to the GEAR@SME project approach, the following can be mentioned.

Three-year information and training programme (PIF)
Legislative Decree no. 73/2020 introduced the " Three-year information and training programme (PIF)", financed with 3 million euros per year. It is established that by January 31, 2021 (and then every 3 years) ENEA, in agreement with the GSE, shall prepare a programme to "promote and facilitate the efficient use of energy" and, after a public consultation, submit it to the Ministry of Economic Development for approval. The programme, to be completed by 2030, includes the following actions directly addressed to enterprises:

- raising awareness and encouraging companies to carry out energy audits and use incentive tools to install efficient technologies
- raising awareness among businesses and household customers on the efficient use of energy, including by disseminating information on incentive mechanisms and their access methods.

The "Italia in Classe A" Campaign
It is well known that there are some legislative, institutional, financial, technical, communicative barriers that constitute an obstacle to the implementation of energy efficiency policies in SMEs. "Italia in Classe A" is a National Energy Efficiency Information and Training Campaign, scheduled to last three years, promoted by the Ministry of Economic Development and implemented by ENEA in the context of the PIF. It pays attention to companies, implementing a series of initiatives to support, raising awareness and encouraging large companies and SMEs to carry out energy audits and use incentive tools aimed at installing efficient technologies, also promoting good practices in third-party financing systems. A series of training and information events give the possibility to promote all the incentive mechanisms in force on the territory (CB, Conto Termico, European...) and to capitalise, share and disseminate good practices already implemented within regional, national and international funding programmes (H2020, ERDF, ESF, etc.). The main actions identified for SMEs are:

- Joint actions with representative partners spread throughout the territory, to reach SMEs in a more widespread way

- Promotion in the territory of all the incentive mechanisms in force (CB, Conto Termico, European funds, etc.)
- Capitalisation and dissemination of good practices have already been implemented within regional, national, and international programmes (H2020, ERDF, ESF, etc.)
- Expand and intensify communication activities on the web by social channels (e.g., use of students participating in the "school-work alternation" model to make viral videos in host companies)
- Forms of rewarding employees, to make them an active part of the company EE process, through a change in behaviour
- Targeted information actions for the promotion of energy audits
- Month of energy saving
- Participation in trade fairs and events.

The main actions identified for financial institutions are:

- Promotion of Public Private Partnership Mechanisms and sharing of data and experiences of public-private partnership with financial institutions
- Creation of a Working Table composed of BIP promoters, bodies responsible for the incentive mechanisms, central institutions (SMEs and financial institutions), ESCO for:
  - Implementation of model contracts integrating the third-party financing mechanism and forms of incentives
  - Development and promotion of standard methodologies for the calculation of savings integrating the benefits of incentives
  - Development and promotion of ad hoc insurance products
- Capitalisation and dissemination of good practices have already been implemented
- Promotion of all the incentive mechanisms in force at the branches throughout the territory
- Month of energy saving.

8.2.2 Funding schemes

Open regional calls for tenders for energy efficiency in SMEs

In order to encourage SMEs to implement energy audits and monitoring, the Italian government has set up a fund to finance these actions. Recently, several Italian Regions have implemented a series of financing schemes, which are summarised below and involve a significant outlay of financial resources. The funding programmes related to the Emilia-Romagna region active within the GEAR@SME project are illustrated. Similar funding programmes are available in other regions of Northern Italy. Several of these calls for proposals are periodically refinanced at the end of the available financial resources.

Emilia-Romagna Region

The “Fondo Energia” grants low-interest loans with mixed funding, 70% of which comes from the Fund's public resources (ROP ERDF 2014-2020) and 30% from contracted credit institutions. The Fund grants a non-repayable grant, which covers the technical costs incurred for the energy audit, and/or the feasibility study, and/or the preparation of the investment project. Beneficiaries of the intervention are enterprises (SMEs and large enterprises) and ESCOs.

The “Bando PMI per diagnosi energetiche” (“call for energy audits in SMEs”) is part of the regional programme to promote energy audits and energy management systems in SMEs. The regional programme contributes to the implementation of Axis 4 Low carbon economy of ROP ERDF 2014-2020 and Axis 3 of the Regional Energy Plan. SMEs are eligible for grants. The contribution is intended to cover 100% of the eligible costs for the implementation of an energy audit or the adoption of an EnMS. The eligible interventions that must be carried out in a single production site on the territory of the Emilia-Romagna Region are:

- energy audit carried out in compliance with the criteria set out in Annex 2 of Legislative Decree 102/2014
- adoption of EnMS compliant with ISO 50001 standards, including energy audits performed in compliance with the criteria set out in Annex 2 of Legislative Decree 102/2014.

Lombardy Region

“Contributi a favore delle Piccole e Medie Imprese per la realizzazione della diagnosi energetica o l'adozione della norma ISO 50001” (ROP ERDF 2014-2020). It is a non-repayable grant, aimed at covering 50% of eligible expenses net of VAT, for the implementation of energy audits or for the adoption of the ISO 50001 management system in the SME's operational sites, up to a maximum of 10 operational sites. For each operating site, the contribution may not exceed: €8,000 for energy audit and €16,000 for the adoption of the ISO 50001 management system. Deadline: 31 March 2022.

Piedmont Region

“Fondo PMI per innovazione, efficienza energetica e sicurezza” (ROP ERDF 2014-2020). It is a revolving fund to support organic investment programmes of Micro, Small and Medium Enterprises (MPMI), also aimed at introducing innovations in the production process to make it more energy efficient. Only for micro and SMEs belonging to certain economic sectors. Low-interest financing: more than €50,000 for micro and small enterprises; more than €250,000 for medium-sized enterprises. The facility is a loan (partly with ROP ERDF funds at zero interest - for at least 60% of eligible expenses - and partly with bank funds) covering 100% of eligible costs, excluding VAT, repayable in quarterly instalments). There is also a non-repayable contribution in the form of an interest rebate against the interest paid in the bank loan instalment.

Veneto Region

"Bando per l'erogazione di contributi finalizzati all'efficientamento energetico delle PMI "(ROP ERDF 2014-2020). The call covers eligible costs for technical expenses for energy audits performed from January 1st, 2019 and post-intervention (maximum €5,000).

Supported activities and funding schemes

Most regional funding calls provide funds in the form of non-refundable grants and low-interest loans for energy audits and the implementation of energy management systems based on the ISO 50001 model. The calls for proposals include activities aimed at increasing energy efficiency in production processes, the installation of high-efficiency cogeneration plants, activities aimed at increasing the energy efficiency of buildings where the production cycle takes place and the installation of RES plants, investments for energy requalification of buildings and tax relief for energy efficiency of buildings.

Linkage to specific targets

Usually, these regional calls for tenders for energy efficiency in SMEs do not include specific targets to be achieved. Most of the incentives are granted with the aim of carrying out energy audits preparatory for energy efficiency improvement measures and introducing an ISO 50001 energy management system. It is requested that the eligible interventions be in one or more production sites on the regional territory.

Targets reached

Among the Italian Regions that have launched a regional call for tenders in recent years for the promotion of energy efficiency in SMEs, Emilia-Romagna (156 SMEs admitted to contribute to the contribution for energy audits), Sardinia (58 companies, 29 also reported the interventions) and Campania (56 SMEs energy audit + energy efficiency interventions) have obtained concrete and satisfactory results, probably thanks to the fact that the regional calls for tenders also financed the energy efficiency intervention after the energy audit. However, the number is small and limited to some geographical areas.

To encourage SMEs to improve the energy efficiency of their industrial processes, the budget for this measure is about of €15 million for each of the years from 2021 to 2030 but it is estimated that no less than 15,000 SMEs per year will be able to be involved in this initiative and that as many energy efficiency projects will result from energy audits.

Accessibility of funding

Some of the main financial barriers to promoting energy efficiency in SMEs are:

- Lack of subsidies funding
- Difficulty and complexity in obtaining bank loans for deep renovation
- Difficulties in accessing public funding and tax relief.

CB have emerged as the most important policy instrument to incentivise energy efficiency in the industrial sector. White certificates were indicated as the most important policy instrument. Low-interest loans and guarantee funds are rated next. These two incentives can be combined with CB, which is not true for tax cuts and feed-in tariffs. The obligation to name an Energy Manager for large industrial companies does not seem to help much to increase investments in energy efficiency.

The impact of regional calls for tenders

The analysis of the impact of the various regional calls for tenders for the promotion of energy efficiency in SMEs, pursuant to art. 8 of Legislative Decree 102/2014, has highlighted the need to partially modify the approach adopted so far. In recent years, regional calls for proposals have not had the desired effect in terms of results achieved. First of all, due to the fact that not all regions have complied with the Ministerial Call for Proposals for co-financing provided for by the regulation, with funding divided at 50% between the individual Region and MiSE, to finance the implementation of energy audits in SMEs (with a maximum contribution of €5,000 per energy audit) or the adoption of an ISO 50001 certified energy management system (with a maximum contribution of €10,000).

As already explained, among the Italian Regions that have launched a regional call for tenders in recent years for the promotion of energy efficiency in SMEs, only a few have achieved concrete and satisfactory results, in cases where the regional calls for tenders have also financed energy efficiency intervention after the energy audit.

Among the main reasons why the calls did not have the desired success is the lack of appropriate training and information programme to support all stakeholders throughout the duration of the calls.

In order to relaunch on a regional basis, the promotion of energy efficiency in SMEs through energy audit or ISO 50001 energy management systems, the first and essential step is therefore to implement a training and information programme in SMEs at regional level, thanks to the collaboration with the Regions concerned and the trade associations located in the territory.

The process could involve the creation of a sort of energy efficiency network for the implementation of a Regional Efficiency Plan: this would-be working groups or company networks usually composed of a number of companies that share energy efficiency objectives, sometimes even having a network contract, and that want to start a path in this sense in a period of about 3 years.

Best-practice example for other countries

The country has tradable CB in place that are linked to the provisions on energy manager obligations in industry. Certificates can be generated by energy managers implementing savings measures in industry thus creating incentives for putting energy management systems in place. More than 14,000 projects were completed, and 5 million CBs issued, resulting in EUR 600 million in investment during 2013. The industry sector has as a result become active in the EEO system.

The CB system in Italy has delivered substantial savings in electricity and heat use across many sectors. The primary energy savings certified in 2017 amounted to about 1.92 Mtoe, of which more than 55% was achieved through the reduction of natural gas consumption and 26% from savings in electricity consumption. Energy savings in the industrial sector were also awarded a higher number of certificates, to create a stronger incentive than that experienced by other sectors.

CB cannot be cumulated with other incentives charged to electricity and gas tariffs and other state incentives for the same projects. CB can be cumulated with funding provided at local, regional and EU level, such as ERDF ROPs provided by the regions, and which provide access to guarantee funds and revolving funds, interest rate subsidies, and tax relief on business income for the purchase of machinery and equipment.

Correspondence of funding schemes to the GEAR@SME approach

The calls for energy efficiency projects aimed at financing the energy audit and the introduction of ISO 50001 EnMS, under provisions of Legislative Decree no. 73/2020, have an interesting potential because they represent an enabling tool not only for the individual SME but potentially interesting for SMEs located in the same industrial district encouraging the development of collective approaches to energy efficiency.

Furthermore, the Italian experience with CB scheme is a positive one and shows that such a scheme can have many pluses:

- flexibility, in terms of eligible technologies, sectors and market operators, etc.
- capacity, being capable of covering a good percentage of the national targets
- market support, since voluntary parties can play a leading role and use such a scheme both to increase their know-how in complex sectors like the industry and to capitalize and start offering advanced energy services, such as Energy Performance Contract (EPC)
- policy making support, due to the huge number of valuable data collected through PPPMs
- statistics, in terms of assessment of metered energy savings.

8.3 Netherlands

8.3.1 Policies

The Dutch Climate Agreement (Klimaatakkoord) is the central point for all policy measures and sets a target of cutting greenhouse gas (GHG) emissions by 50% by 2030 compared to 1990 levels. It outlines measures that focus on achieving the 2030 targets (and beyond, up to 2050), many of which are relevant for energy efficiency in SMEs, including: taxation; several subsidy schemes; energy savings obligations; CO_2 levy on industry[3]; emission free transport; energy labelling for office buildings; natural gas free business premises. Many of these are elaborated below.

Laws and agreements

GHG reduction target for 2030

In the Dutch Climate Agreement, a reduction target for non-residential buildings in the services sector is set to reduce 1 megaton of CO_2 emissions in 2030, relative to the business-as-usual scenario. The national government has researched the possibilities for CO_2 reduction in existing buildings that go beyond the ambitions of the Environmental Management Act (see section 1.1.2 for more on this Act). The conclusion is that 1 megaton of CO_2 reduction is possible in the services sector when most building owners take cost effective energy efficiency measures. Cost effective means that the investments pay back within the life time of the measures: roof or floor insulation, solar boilers and hybrid heat pumps. Implementation of these measures is voluntary and will be supported by sector roadmaps, the energy performance standard for 2050, and ISDE subsidy scheme (Ollongren, 2020).

Green deals / Agreements

Various agreements and green deals have been concluded between central and local governments and other parties, such as companies, social organisations or other governments. With a green deal, parties strive to find solutions to work in a sustainable manner. The government helps these parties with various bottlenecks such as ambiguous or conflicting regulations. More than 200 green deals have been signed since 2011. Various green deals reinforce energy efficiency such as the zero emission urban logistics deal, the efficient electric drive systems for industry deal, the participation of the environment in sustainable energy projects deal, and "Het Nieuwe Draaien" green deal focusing on mobile machinery. The Netherlands will continue to focus on green deals and agreements (NECP, 2019)

[3] Relevant for larger industrial companies, not directly for SMEs. Some larger industrial companies are located on medium-large business parks, so this measure could be relevant under the GEAR@SME project scope in the Netherlands.

Multi-Year Agreements on Energy Efficiency (MJA3/MEE)

More than 1,000 companies from 40 sectors are working on energy saving and CO_2 reduction by 2020. They do this in the context of the Multi-Year Agreements on Energy Efficiency (MJA3 / MEE) and the Energy Agreement. Companies participating in the Multi-Year agreements have obligations, such as on levels of energy savings, energy management, delivering an energy efficiency plan, and monitoring the results. Trade associations draw up a multi-year plan for the entire industry. Currently, it is not clear yet if these agreements will be extended after 2020.

Roadmaps, strategies and visions

Roadmaps

Roadmaps are developed for social real estate sectors to explain the steps they are going to take towards a low CO_2 real estate portfolio by 2050. The Sustainable Social Real Estate Knowledge and Innovation Platform will support the sectors. Also, large commercial real estate owners are supported to make road maps for their real estate portfolios. There are also roadmaps for different industrial sectors, which show the different pathways that can be taken to improve energy efficiency by 50% in 2030 compared to 2005.

Heat Transition Vision

Provides a first direction for the approach to insulating and making the built environment natural gas-free in the Netherlands. Every municipality must have adopted a Heat Transition Vision before the end of 2021. The vision must describe how the municipality is working towards a heat supply without natural gas by 2050 at the latest, and which districts will be first to make the shift by 2030. The Dutch Climate Agreement states that municipalities will have a directing role in this district-oriented approach.

Campaigns

The Dutch government creates energy awareness with public campaigns such as the "Kies de beste band" (choose the best tyre) and "Wat je moet weten over de Informatieplicht energiebesparing" (what you need to know about the energy saving information requirement).

Regional Energy Strategy (RES)

Dutch municipalities, provinces and water boards work together with stakeholders on a Regional Energy Strategy (RES) within the region. The RES is an instrument for jointly arriving at choices for the generation of renewable electricity, the heat transition in the built-up environment and the required storage and energy infrastructure. Among other things, the RES offers insight into the possibilities for regional generation and savings (NECP, 2019).

Standards, programs, incentives

Energy performance standard 2050 for existing non -residential buildings

In the case of non-residential buildings, the Netherlands is looking into making existing commercial and social real estate more sustainable, such as office buildings, schools and care institutions. A coherent package of supporting instruments is being developed. The most important measure is the setting of a legal energy performance standard for existing non-residential buildings as of 2021. This concerns a target standard for 2050. A statutory final standard will apply for 2050. At that time all non-residential buildings must be low CO_2. The standard is not for industrial halls. These will not have any energy performance standards.

Innovation programs

There are innovation programs that elaborate a multi-annual programmatic approach to knowledge and innovation to contribute to the missions and targets set out in the Dutch Climate Agreement. This programmatic approach helps to provide a way of structuring funding schemes (such as the subsidy programmes described below in section B). The majority of the MMIPs are of relevance to SMEs and energy efficiency, including:

- MMIP 3: Accelerating energy renovation in the built-up environment
- MMIP 4: Renewable heat and cooling in the built-up environment (including greenhouse horticulture)
- MMIP 5: Electrification of the energy system in the built-up environment
- MMIP 6: Closing industrial chains
- MMIP 7: A CO_2 free industrial heat system
- MMIP 9: Innovative propulsion and use of sustainable energy carriers for mobility
- MMIP 10: Efficient transport movements for people and goods
- MMIP 13: System integration.

Energy tax and the Surcharge for Sustainable Energy (ODE)

Tax on electricity and gas consumption within all sectors. The ODE is levied on top of the energy tax. The energy tax will be adjusted to create a greater incentive for increased sustainability: gas becomes more expensive, electricity becomes cheaper. In 2023, the proposed increase in the energy tax on natural gas will be looked at, in view of the autonomous development of market prices, to assess whether it is still necessary to maintain the desired sustainability incentives.

Existing regulation and obligations for SMEs

There are numerous regulations with regard to energy efficiency in SMEs. The most important are the following:

Environmental management Act (Wet milieubeheer)

This law provides an obligation for companies and institutions with an annual consumption of 50,000 kWh electricity or 25,000 m³ natural gas or equivalent, to take

all energy saving measures with a payback period of five years or less. The environmental management act is supplemented by the **information obligation (Informatieplicht energiebesparing)**, which obliges SME's to actively inform the government to what extent they adhere to the **Energy savings obligation** and the list of **Best Available Techniques (BAT)**, which provide SME with a list of measures that falls under the energy savings obligation. Furthermore, the **Duty of care (Zorgplicht)** obliges companies to prevent or otherwise limit all negative consequences for the environment as much as possible. The duty of care applies to all 'usual' environmental aspects, including the efficient use of energy ('doelmatig gebruik energie').

Energy Performance of Buildings Directive:

- **Energy performance requirements:** The most important requirement in this regard is the Energy Performance Coefficient (EPC). In addition to energy performance requirements for new constructions, the Building Decree imposes requirements on conversions and renovation.
- **Second revision of the Energy Performance of Buildings Directive (2018/844):** The Netherlands is currently still working on the implementation of the second revision of the Energy Performance of Buildings Directive. This revision also contains new and amended provisions aimed at energy savings for buildings, such as system requirements for technical building systems, documentation of energy performance of technical building systems, self-regulating equipment and inspections of heating and air-conditioning systems.

Minimum Energy label C for offices in 2023

As of 1 January 2023, any office larger than 100 m² must have at least an energy label C. If the building does not satisfy the requirements, it may no longer be used as an office from 1 January 2023.

EED energy audits[4]

The EED Energy Audit is a systematic, four-year approach to collect information about a company's current energy consumption and savings potential. The EED is obliged for companies with more than 250 employees or more than 50 million euro annual revenue, so it is not aimed at SME. From 1 July, 2019, companies can digitally submit their energy audit report to the Netherlands Enterprise Agency (RVO). They do this within 4 years of submitting their previous energy audit report, but no later than December 31, 2020.

Environment Act (Omgevingswet; 2022)

The government wants to simplify and merge the rules for spatial development under the Environment Act, so that it will soon be easier, for example, to start construction

[4] Not directly relevant for SMEs, but mentioned here because relevant for larger companies that are located on business parks.

projects. The Crisis and Recovery Act already makes this possible, for example by adjusting existing rules. The Environmental Act is expected to enter into force on 1 January 2022. This law sets out rules and laws that need to be followed when making buildings (residenatial or other) more sustainable e.g. EPC requirements and compulsory energy label.

IPPC installations[5]

IPPC installations are the larger industrial companies covered by the Industrial Emissions Directive (2010/75 / EU), which applies to all member states of the EU. The Industrial Emissions Directive requires that companies only commission the installation if they have an environmental permit. This integral permit must comply with the best available techniques (BAT). For IPPC installations, the best available techniques are in BAT conclusions. These BAT conclusions are set at European level. A permit issuer must also take into account designated BAT documents for IPPC installations.

CO_2 tax industry (2021)[6]

Companies in the industry sector that are covered by the European Emission Trading scheme with high CO_2 emissions will soon pay a national CO_2 tax. The levy is part of a broad package of measures that encourages industrial companies to invest in sustainability. This has been agreed on in the Dutch Climate Agreement.

What incentives are there?

- Financial incentives
  - Addressed under part (B).
- Supportive incentives
- Other.

Business Investment Zone (BIZ)

In recent years, the BIZ law has been an experimentation law. Until 2014, the BIZ law was temporarily an experiments law. As of 2014, this has become an official law. BIZ stands for Business Investment Zone. A business investment zone is an area where the entrepreneurs work together to improve their area. To make this possible, the municipality levies an annual amount. The proceeds of this levy are paid by the municipality as a subsidy to the local business association. This allows the entrepreneurs to jointly invest in matters such as quality of life, safety, spatial quality and economic development of the area, which can include energy efficiency improvements.

[5] Again, not directly relevant for SMEs, but mentioned here because relevant for larger companies that are located on business parks.

[6] Also not directly relevant for SMEs, but mentioned here because relevant for larger companies that are located on business parks.

A business investment zone offers a number of advantages. Membership of an ordinary local business association is voluntary. Entrepreneurs who are not members also benefit from the activities organized by the local business association. It is known that most business associations have to put in a lot of effort to receive the contribution from the members. A corporate investment zone solves such problems. If a large majority of entrepreneurs have voted for a business investment zone, the contribution is levied by the municipal tax authorities. Every entrepreneur in the area has to pay this levy.

Obligations or incentives for certain sectors

- MJA and MEE (mentioned above) are at sector level
- Different recognised measures (Erkende maatregelen) are specified for each sector
- Performance standards are specified for different facility and building types. Energy performance certificates are issued to evidence how energy-efficient, for example, residential buildings, offices and hospitals are (Government of the Netherlands, n.d.).

Self-obligations / self-regulatory mechanisms

Some companies do not have to submit an EED Energy audit report, because they already fulfil the EED Energy audit obligation in a different way, such as:

- **Certified energy management standards:** Companies that apply a European or international certified energy management system - ISO 50001 or ISO 14001 in combination with ISO 14051. These companies already carry out an energy audit;
- **Recognised quality labels:** Companies with a quality label (covering the entire company or institution) that is recognised by the Ministry of Economic Affairs and Climate.

As energy audits are not an obligation for SMEs, this does not concern SMEs, but may concern large companies in business parks.

CO_2 Performance Ladder (CO_2 prestatieladder)

The CO_2 Performance Ladder is an instrument that helps organisations reduce their carbon emissions in the organization, in projects and in the business sector. With a certificate on the Ladder, organizations can receive an award advantage for their registration on tenders. The instrument is used as both a CO_2 management system as well as a procurement tool. The certificate may also be used to comply with the EED Energy Audit obligation, as an alternative to an energy audit.

Linkage to specific targets

In the Dutch Climate Agreement:

- 2030: 49% CO_2 reduction (compared to 1990), with a view to achieving a 55% reduction by 2030.

  - Built environment: 3.4Mt CO_2 reduction compared to reference scenario
  - Industry: 14.3Mt (59%) CO_2 reduction compared to 1990 levels
- 2050: (almost) all business premises natural gas free

Targets reached

The progress of the Dutch energy transition and the expected impacts of national policies are monitored in the yearly Climate and Energy Outlook (KEV: Klimaat- en Energieverkenning). The 2019 KEV (PBL et al., 2019) makes 4 key observations:

- large differences exist between the projected reduction by 2030 (28%-39%) and the objective (49%) - past targets have not been achieved.
- There is a clear gap between agreements and realization of projects.
- The Netherlands becomes a natural gas importer, will have more renewable energy (25% in 2030) and stops coal burning
- Worldwide efforts are insufficient to achieve Paris Agreement ambitions.

Best-practice example for other countries

Environmental management Act (Wet milieubeheer)

Obligation for companies (including SMEs) and institutions with an annual consumption as of 50,000 kWh electricity or 25,000 m³ natural gas or equivalent, to take all energy saving measures with a payback period of five years or less. Being elaborated as part of the Climate Agreement, the Recognised Lists of Measures (EML) form the basis. This contains sector-specific energy-saving measures with a payback period of 5 years or less. An EML has been drawn up for 19 sectors. If a company has taken all the applicable recognised measures, it is assumed that it complies with the energy saving requirement. The report is submitted electronically to the RVO.nl eLoket, and the competent authority (municipality or authorised environmental service) has access to these reports. This means that not only is the energy saving requirement for entrepreneurs clarified, but the competent authority can also implement information-driven supervision and enforcement. The four-yearly requirement to provide information will continue to exist after 2020 and will be included in the Environment and Planning Act.

The core obligations in the Act are:

- **Energy savings obligation (Energiebesparingsplicht):** obliges companies and institutions to implement all energy-saving measures with a payback period of 5 years or less. This is the energy saving obligation. This applies to companies and institutions that per year consume from 50,000 kWh or 25,000 m3 of natural gas or equivalent (part of „Wet Milieubeheer" above).
- **Information obligation (Informatieplicht energiebesparing):** companies and institutions should have reported by 1 July, 2019 which energy-saving measures they have implemented. This can be done via the eLoket of RVO (part of „Wet Milieubeheer" above). Zorgplicht voor doelmatig energiegebruik.

- **Duty of care (Zorgplicht):** duty of care by companies - a company must prevent or otherwise limit all negative consequences for the environment as much as possible. The duty of care applies to all 'usual' environmental aspects, including the efficient use of energy (‘doelmatig gebruik energie’).
- **Best Available Techniques (BAT):** The Environmental Management Act and Environmental Law General Provisions Act (Wabo) requires environmental regulations to comply with the “Best Available Techniques” (BAT). BAT can be included in national environmental regulations that have immediate effect. However, environmental permits, environment and municipal decisions, must also comply with BAT. BAT includes: applied techniques; design, construction and dismantling of an installation; maintenance and operation of an installation. The need for BAT does not depend on the type of business. The interpretation of BAT can differ per industry[7].

The energy savings obligation in the Environmental management Act has been in place since 1993. Until now it has not been enforced. Furthermore, the capacity at Environmental Agencies is too limited to inspect SME’s to see if they oblige to this law. As part of the Dutch Climate Agreement the information obligation has been installed. Because of this decision the act has come to the attention to SME’s, since they now actively have to report they do not abide to the law. This has been a major reason for the activation of SME’s to consider implementing energy saving measures. Before they were barely aware this law existed. Furthermore, this has activated Environmental Agencies to enforce this law, and to support initiatives to collectively assist SME’s to oblige to this law to efficiently attribute enforcement capacity.

Support scheme province of North Holland

The province of North Holland has developed three supporting actions that have been successful in activating collective approaches on business parks through trusted partners. Firstly the subsidy for Support of Futureproof working locations (Ondersteuning van Toekomstbestendige Werklocatie, OTW) has provided financial support for building the capacity on business parks to build collective projects (e.g. provide local entrepreneurial organizations with the means to acquire a park manager). This is the basis for realizing collective energy projects, which are financially supported by the HIRB Subsidy (Herbestemming en Intelligent Ruimtegebruik van Bedrijventerreinen, HIRB). Thirdly, province has created capacity through the Regional Development agencies NHN and PHB to actively engage local entrepreneurial organizations to us the OTW and HIRB subsidies and to support them in their activities towards the development of collective energy projects.

Correspondence of policies, objectives and incentives to the GEAR@SME approach

Following the foursteps of GEAR@SME, the number of correspondences can be identified:

[7] The BAT is targeted at techniques to reduce air pollution, but is also relevant for energy savings techniques.

1. **Activate:** many of the policies and regulations can help to activate and organise (see answer to question 16). For example, WMB activates SMEs.
2. **Organise:** For example, RES organises at the regional level.
3. **Enable:** teaching and development (capacity building) takes place under MKB idee and SLIM. Funding schemes such as SDE++ enable SMEs to undertake sustainable energy measures.
4. **Embed:** salderings (net metering) up to 2023 for solar PV helps to embed PV projects as viable business cases for SMEs

8.3.2 Funding schemes

The following **tax incentives** relate to energy efficiency:

- **Energy efficiency investment tax concession (EIA)**: continuous tax scheme for deduction of investments in energy efficiency from the taxable profit.
- **Small-scale investment tax concession (KIA):** continuous tax scheme for deduction of small scale investments in business assets from the taxable profit, can be combined with other tax schemes.
- **Environmental investment tax concession (MIA):** continuous tax scheme for deduction of investments which benefit the environment from the taxable profit, cannot be combined with EIA.
- **Depreciation of environmental investments (VAMIL):** continuous tax scheme for deduction of investments which benefit the environment from the taxable profit, cannot be combined with EIA. Compared to MIA, this deduction can be spread over multiple years. This provides a liquidity and interest benefit.
- **Lower VAT, ongoing existing policy:** There is a reduced VAT rate for applying insulation material and (insulation) glass. VAT has been reduced from 21% to 6%.
- **R&D tax credit (WBSO):** for innovative projects and technical-scientific research, an SME may apply for tax credit. This tax scheme can be used for sustainable energy projects.

The following **national subsidies** support energy efficiency in SMEs:

- **Investment Grant for Sustainable Energy (ISDE)**: currently focuses on sustainable installations such as heat pumps. The ISDE is being expanded so that a subsidy can also be requested for insulation. 100 million euros will be available for the ISDE annually up to 2030.
- **Net metering (Saldering):** electricity billing mechanism that allows small-scale energy consumers who generate electricity from solar panels to use that electricity anytime, instead of when it is generated. Will be phased out from 2023 onwards.

- **PostCodeRoos:** tax scheme which offers participants in a collective solar or wind energy project exemption from energy tax on the energy they jointly generate.
- **Stimulation of Sustainable Energy Production (SDE++):** subsidy scheme which promotes the generation of sustainable energy and the application of other CO_2-reducing technology. It provides a compensation per avoided ton of CO_2 emissions for the extra costs associated with the production of renewable energy or the operation of other CO_2-reducing technologies. A budget of 5 billion EUR is available for applications in 2020.
- **Accelerated climate investments in industry (VEKI):** subsidy scheme for enterprises wanting to take measures which reduce CO_2 emissions. 28 million euros will be available for the upcoming year.

Especially on a **provincial level**, a number of subsidy schemes can be found which provide subsidies for investments (both individual and collective) and process support. Examples are:

- **Future-proof business parks, Gelderland** (Provincie Gelderland, n.d.-b)**:** subsidy scheme to improve business parks in the province of Gelderland, and to make them more sustainable. 25% is reserved for expertise and process support, 75% to support the realisation of new projects. Until 2022, 5.4 million euros is available.
- **Energy savings at enterprises and institutions, Gelderland** (Provincie Gelderland, n.d.-a)**:** subsidy scheme for company collectives within the province of Gelderland to hire expertise to support the process of exploring energy efficiency opportunities. Until 2020, 1 million euros is available.
- **Cash-in your roof (Verzilver uw dak):** support scheme for requesting SDE++ subsidy for PV panels on company roofs and for realising the project.
- **Energy on business parks, Zuid-Holland** (Provincie Zuid- Holland, 2020)**:** subsidy scheme for energy-efficiency, renewable energy and local heat network measures, for enterprise collective in the province of Zuid-Holland. In 2020, 750.000 euros is available.
- **Restructuring and intelligent use of space business parks, Noord-Holland (HIRB+):** subsidy scheme to stimulate sustainable business parks through restructuring, transformation, sustainable management, sustainable measures and development of fast internet. 10 MEUR is available for the period 2019-2023.
- **Sustainability scan for businesses and business parks, Zeeland:** subsidy scheme which covers 50% of the costs for sustainability scans.

On top of the subsidies listed above, The Netherlands has several **innovation subsidies**. The following are relevant for energy efficiency and renewable energy at SMEs:

- **Demonstration Energy and Climate Innovation (DEI+):** innovation subsidy scheme for pilot and demonstration projects which focus on reduction of CO_2 emission.
- **Renewable Energy Transition (HER+):** subsidy scheme for innovative development and demonstration projects which focus on reduction of CO_2 emission.
- **Mission Driven Research, Development and Innovation (MOOI):** subsidy scheme for integral research, development and innovation projects which contribute to reducing CO_2 emissions.

Educational activities and capacity building on energy efficiency at SMEs are supported by the following subsidy schemes:

- **Subsidy Scheme Learning and Developing for SMEs (SLIM):** subsidy for initiatives on learning and development at SMEs, which includes the topic of energy efficiency.
- **Policy experiment Human Capital (MKB Idee):** subsidy for initiatives which enhance the learning culture at SMEs, and remove obstacles, which can be applied to energy efficiency initiatives.

A number of **local and regional energy funds** can be found in the Netherlands, which provide SMEs with attractive loans for energy efficiency and renewable energy measures. Examples are:

- Energy fund Utrecht
- Energy organisation Drenthe
- Energy fund Hof van Twente
- Energy fund Raalte
- BOM (Brabant Development Company) Renewable Energy fund
- Development & Restructuring fund Gelderland (OHG)
- Limburg Energy Fund (LEF)

On a national level, the following fund is accessible for sustainable energy measures:

- BNG Sustainability Fund

Activities and funding supported by schemes
See descriptions under (10).

Linkage to specific targets
The funding schemes are linked to the Dutch Climate Agreement (see policies) and local/regional ambitions and targets.

Reached targets reached
Addressed under question (7).

Accessibility of funding

Funding for process **management** of collective energy projects is difficult to realize. Mostly this is organised at the provincial level. In the Netherlands approximately a quarter of all provinces have sufficient subsidy schemes in place to support process management. Another source for funding of process management is to obtain this through an entrepreneurial fund. Mostly these funds are facilitated by the municipality but the investments are done by the SME's themselves, mostly through membership fees. The BIZ policy (see above) solves some of the problems, but it costs a lot of effort to organize a BIZ and the chances of success are not great.

Funding for financing the investment in energy efficiency measures have been improved in recent years. Regular financers like banks, sometimes in combination with local investment funds are willing to invest in energy efficiency projects under favourable conditions.

ESCos: Energy performance contracts (EPCs) seem to offer a solution for financing investments n energy efficiency measures. ESCos have not yet been widely used in the Netherlands, although the market is growing. Central government encourages EPCs by sharing good examples and it offers, by means of the Guidelines for the Procurement of Energy Performance Contracts, tools for producing an energy performance contract. As part of the European GuarantEE programme, RVO.nl developed an EPC facilitator pool together with 14 European partners. In collaboration with financial institutions and the installation sector, options for promoting ESCO constructions are also being examined. Clarifying the use of the EIA and any other instruments in ESCO constructions is being considered.

SMEs generally need help (usually from an energy advisor or subsidy advisor) to apply for **subsidies**. Especially subsidies for innovation projects are difficult to obtain for SMEs. The acquisition of these projects is resource and time intensive, and requires in-depth knowledge of innovation programmes.

Tax incentives are easier to access, but often still require help of specialised advisors.

Best practice example for other countries

SDE++

The SDE++ subsidy is a follow-up to the SDE+ and SDE subsidy schemes for renewable energy production, and now also covers CO_2 reducing technologies. It provides a compensation per avoided ton of CO_2 emissions for the extra costs associated with the production of renewable energy or the operation of other CO_2 reducing technologies. Applications are ranked in order of requested subsidy per reduced ton of CO_2. Granted subsidies are awarded over a period of 12 or 15 years, depending on the technology. The SDE++ will open in November 2020 with an available budget of 5 billion euros. More information on the exact workings of the

SDE subsidy schemes can be found here: https://english.rvo.nl/subsidies-programmes/sde.

The SDE subsidy schemes have been a key enabler of renewable energy projects in the Netherlands by bridging the gap to a profitable business case. Currently awarded SDE subsidies contribute to around 120 PJ of renewable energy generation in May 2020 (which is around 50% of the current total renewable energy production in the Netherlands) and are expected to contribute to around 230 PJ in 2024, as a large number of awarded projects is still in development (RVO, 2020b).

SDE subsidies are commonly used by SMEs to close a business case for PV panels.

Regional driving forces in Noord-Holland

Development company Noord-Holland Noord (ONHN) and Project office Restructuring Business Parks (PHB) are two successful driving forces in the energy transition in the province of Noord-Holland. Both offer individual guidance for the implementation of sustainable measures by making knowledge and experience available. The organizations also offer support in the field of sustainable investments.

Correspondence of funding schemes correspond to the GEAR@SME approach

Capacity building subsidies and local/regional process support subsidies can help in activating and organising SMEs. Funding and subsidies can be important enabling mechanisms through funding provision to SMEs that otherwise could not source finance and to close a profitable business case.

8.4 Romania

8.4.1 Policies

Existing policies with regard to energy efficiency in SMEs
As the EU has further adopted new targets for 2030, all EU Member State had to design a 10-year National Energy and Action Plan (NECPs) for the period of 2021-2030 which needed to be submitted to the Commission by the end of 2019. The final version of the plans for each country is available on the European Commission's website.

Romania's main objective described in the plan is to follow the best environmental protection practices, by focusing on decarbonisation. Therefore, the overall emission reduction target is set for 44% by 2030, compared to the 2005 baseline.

The future strategy is based on:

- Increasing the municipal waste reuse and recycling rate to minimum of 70%;
- Supporting the development of distributed electricity generation using Renewable Energy Sources (RES)
- Storing only waste which was treated in prior;
- Promoting transition to a circular economy;
- Promoting electromobility in road transport;
- Increasing energy efficiency in the industrial sectors;
- Digitalisation of the Romanian energy system;
- Implementing demand response measures.

Encouraging the development of energy storage capacities by developing capacities and mechanisms to integrate the discontinuous RESs in the national energy system, including the small storage capacities at the prosumer premises.
The targets for renewable energy are gradually targeted within the 10 years, as it follows:

- At least 18% of the total increase forecasted in the period 2020-2023, by 2022;
- At least 43% of the total increase forecasted in the period 2020-2023, by 2025;
- At least 65% of the total increase forecasted in the period 2020-2023, by 2027.

The RES share in the gross final electricity (RES - E) consumption for the period of 2020-2013 is described in the figure below:

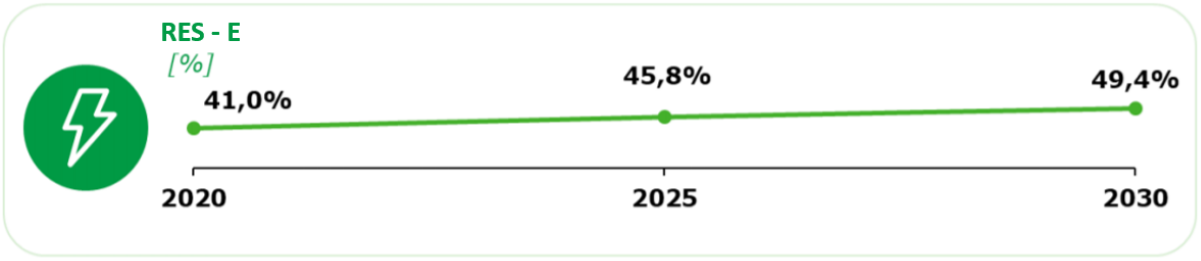


Figure 11 The RE share in the gross final electricity (2020-2030)[8]

The RE share in the gross final electricity consumption in the sector of heating and cooling is indicated by the graphed indicative trajectory below:

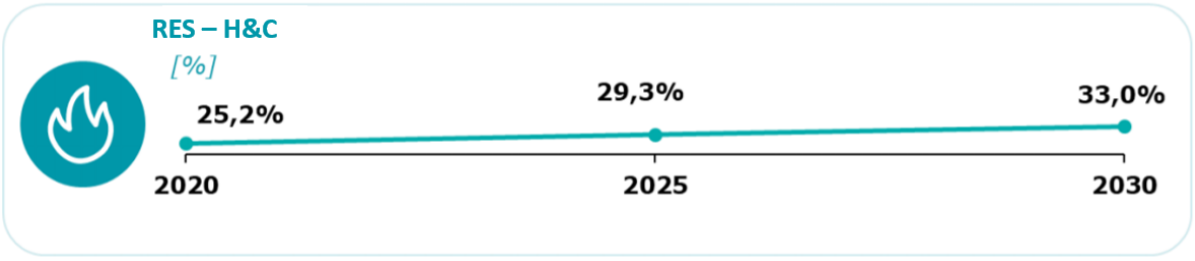


Figure 12 The RE share in the gross electricity consumption in the sector of heating and cooling (RES - H&C)[9]

The main measures in the industrial sectors described in the action plan are the following:

- Reducing the intensity of carbon emissions in the industry;
- Organizing dedicated training courses on the topic of the efficient use of resources and clean production;
- Financial incentives for the staff specialised in the efficient use of resources;
- Setting up/developing industrial parks operating under the principle of industrial symbiosis or fostering the existing ones;
- Development of regional clusters for sustainable energy planning and use of smart energy within SMEs;
- Supporting green and innovative production processes and favouring the efficient use of resources by SMEs;

No specific policies for SMEs related to Energy Efficiency, but ongoing financial support programmes are prepared to be launched so as the SMEs to implement EE and RES.

[8] Deloitte calculation based on the information submitted by the INECP Interinstitutional Working Group and of the Commission's recommendations

[9] Deloitte calculation based on the information submitted by the INECP Interinstitutional Working Group and of the Commission's recommendations

At regional / local level, as we know, no local support or policies are in place for the SMEs, with the exception in one city of providing tax deduction for the owners of the green buildings, which can also be SMEs.

Existing regulation and obligations for SMEs
Even though the legislative framework exists for both energy auditors and energy managers, it does not obligate SMEs to assign an energy manager within their company, or to conduct an energy audit. There is an obligation to conduct energy audits once every 4 years which is available for large consumers, those having an annual consumption of at least 1000 toe.

At the building level, law no. 372/2005 of energy performance of buildings with subsequent additions promotes measures to increase the energy performance in the buildings, but does not refer separately to the SMEs, but to buildings that can also be owned by SMEs.

Financial incentives
Financial incentives have been established by the Government through the so called ElectricUp programme. The purpose of the programme is to increase the use of renewable energy sources and energy efficiency, also improving air quality by reducing greenhouse gas emissions.

A first financing programme that will be launched by the Ministry of Economy, Energy and Business Environment is Electric UP, a programme dedicated to the Hospitality industry and SMEs in Romania, through which entities can benefit up to 100% non-reimbursable financing for the installation of a panel system photovoltaic with an installed power between 27 kWp - 100 kWp and for the installation of 22 kW recharging stations for electric vehicles and plug-in hybrid electric vehicles.

Obligations or incentives that apply only to certain sectors
According to the Law no. 121 from July 2014, on energy efficiency, Art 9, companies that consume more than 1,000 toe energy annually have the obligation to carry out an energy audit every 4 years on an energy consumption contour, established by the company, which represents at least 50% of the total energy consumption.
The presence of an energy manager is mandatory in companies operating in any type of industry with a consumption higher than 1000 toe / year.

Self-obligations / self-regulatory mechanisms
Not in place.

Linkage of incentives / obligations / self-obligations to specific targets
Not in place for SMEs.

Correspondence of the policies, objectives and incentives to the GEAR@SME approach

The financial support to implement EE and RES is a good opportunity for GEAR@sme project to enhance the application of other EE related solutions and the professionals skills.

Energy efficiency network

SAMER - Associations of energy auditors and energy managers from Romania, which is a community of professionals in the field of energy efficiency. It supports and is actively involved in the sustainable development of Romania by increasing energy efficiency in the energy sector, industrial and urban and rural communities.

Professionalization

SMEmPower Efficiency project offers free Education & Training programme for energy professionals from SMEs in 8 countries, including Romania under the European Qualification Framework (EQF).

Other incentives - SME INVEST

The SME INVEST ROMANIA programme allows SMEs significantly affected by the COVID-19 crisis to ensure their liquidity for the current activity or for investments, by accessing one or more loans for investments and / or one or more loans for working capital loan, guaranteed by National Credit Guarantee Fund for SMEs in the name and account of the Romanian state, through the Ministry of Public Finance (*IMM Invest Romania*, 2020).

8.4.2 Funding schemes

RES & EE support schemes in Romania		
Type	**Target Group**	**Description**
Support scheme	SMEs	Open calls for European Funds as non-reimbursable financial support, up to 80% for SMEs: - POIM 6.1 - Support investments in the production of electricity and/or thermal energy from biomass/biogas and geothermal energy. - POIM 6.2 - Aims to reduce energy consumption for industrial consumers, within a period of maximum 5 years from the finalization of the project. Some of the eligible actions are: implementation of energy consumption monitoring system, remote terminal units, data communication system etc. Companies

RES & EE support schemes in Romania		
Type	**Target Group**	**Description**
		within industry and energy consumption of over 1,000 toe/year can apply. - POIM 6.4 – Call dedicated to support investment in high efficiency cogeneration.
Grant scheme	Agriculture SMEs	**"Measure 4": Investments in physical assets - Electricity, Heating & Cooling** The subsidy "measure 4", encompassing the sub-measures 4.1. and 4.2., is part of the National Rural Development Programme and financed by the European Agricultural Fund for Rural Development (EAFRD). The National Rural Development Programme's new financing period operates from 2014 to 2020. The programme targets are to promote the use of renewable energy sources for the farm own consumption.
Grant scheme	Large enterprises, SMEs, Local Authorities	**Support scheme for less exploited energy source** The state aid scheme has been approved by Government Decision no. 216/2017 in April 2017 to promote energy production from less exploited energy sources, namely biomass, biogas and geothermal energy. The new support scheme is supported by the Ministry of Regional Development, Public Administration and European Funds, and aims to increase the electricity and thermal energy production from these sources by 60 MW until the end of 2023.
Grant scheme	SMEs, Public entities	**EEA and Norway Grants** The aim of the programme is the reduction of carbon emissions caused by electricity production and safety of electricity supply. The use of RES, increased energy efficiency in public and private sector, energy research and development, awareness of the RES and EE benefits (energy saving, monetary saving, CO_2 emission reduction, number of jobs created) leads to proper impact toward carbon emissions. The programme is conducted by the Norwegian organization Innovation Norway, as Fund Operator, in partnership with the Ministry of Energy, Ministry of the Environment, Nation Energy Authority in Iceland and the Norwegian Water Resources and Energy Directorate.

RES & EE support schemes in Romania		
Type	**Target Group**	**Description**
		Different calls of projects were established in 2018-2020, such as: Renewable Energy, Energy Efficiency, SME Growth. The **SME Growth Romania** Programme is a business development programme which targets sustainable growth in the Romanian business sector. The three focus areas are: Green Industry Innovation, Blue Growth and ICT.
Grant scheme	SMEs and hospitality industry	**Electric - Up** The programme aims to support SMEs from hospitality industry with a maximum grant of 100.000, representing 100% from the eligible costs, for installing photovoltaic system for electricity production with a installed power of 27 kWp-100 kWp and for installation of charging station of 22 kW for electrical vehicles.

Supported activities and funding schemes

- Energy reduction, as mandatory output of programmes such as SME Growth, Green Industry Innovation;
- Greenhouse gas reduction / carbon footprint reduction;
- Implementation of energy efficiency measures, as part of all programmes;
- Implementation of Renewable Energy Sources, sustainable energy production;
- Sustainable growth of the business sector;
- Installation of PV panels and EV chargers.

Linkage to specific targets

No.

Accessibility of funding

In general, the SMEs find difficulties in accessing financing or grants because of bureaucratic organizational procedures. A survey made within the SMEmPower Efficiency Horizon 2020 Project (https://smempower.com/) aimed to identified the current barriers which hinder SMEs from eight countries to implement energy efficiency measures and block the carrying out of energy audits. The results showed that 45% of the total 213 SMEs find difficulties in accessing funding, while 28% identified as main barrier the organisational bureaucratic procedures. Specifically, in Romania, 57% of the respondents stated that they did not carried out energy audits at all., and the same percentage doesn't have an energy efficiency action plan in the next 3 years.

More than half of the respondents declared that use own resources when investing in energy efficiency measures, and just 27% of them apply for European or other grants.

The main legislative and financial barriers were identified and are described in Figure 13.

COUNTRY	BARRIERS	
	LEGISLATIVE	INSTITUTIONAL
ROMANIA	Changes in the legal framework; Legal framework that provides a methodology for the implementation of Energy Performance Contracts with ESCOs; Unclear current situation regarding the transition of the EED department from ANRE to the Ministry; SMEs are not obliged to assign an energy manager and to carry out energy audits; Bureaucracy.	Inadequate decision structure at local or national level; Lack of standards and energy labeling; Lack of laws and regulations for EE; Lack of energy management in enterprises; Comparison between short term EE measure's investment and other investments with higher returns.

Figure 13 Legislative and Institutional barriers to energy efficiency in SMEs (SME mPower Efficiency, 2020).

Correspondence of funding schemes to the GEAR@SME approach
In a limited way. Mainly, these funding schemes do not support joint efforts, and because of the complicated and bureaucratic procedures SMEs do not think about "teamwork", therefore an "everybody for themselves" approach is identified.

8.5 Sweden

8.5.1 Policies

As a starting point, Sweden's national climate policy framework and Sweden's national energy policy is shortly described. The latter contains different energy targets, but there are no specific energy efficiency targets directed towards industrial sectors or SMEs.

The national climate policy framework for Sweden (Government Bill 2016/17:146) was adopted in June 2017 by Sweden's Riksdag (*Final NECP Sweden*, 2020). The framework consists of national climate goals, a Climate Act and a climate policy council. One such climate goal is that Sweden is to have zero net emissions of greenhouse gases into the atmosphere by 2045 and should thereafter achieve negative emissions (supplementary measures can be included). There are also milestone climate targets specified for the years 2020, 2030 and 2040. The Climate Act establishes since 1 January 2018 that the Government's climate policy must be based on the climate goals (Government Offices of Sweden, n.d.). It also specifies how the climate policy work should be carried out.

In June 2016, an energy policy agreement was reached between five political parties representing a majority in the Swedish Parliament (*Final NECP Sweden*, 2020). Sweden's energy policy is based on the same three parts as energy cooperation in the EU, why it aims to combine ecological sustainability, security of supply and competitiveness. As a result of the agreement, Sweden's Riksdag has decided upon energy targets (Government Bill 2017/18:228), e.g. that by 2030, Sweden's total energy use is to be 50 percent more efficient than in 2005 (*Final NECP Sweden*, 2020). The target is expressed in terms of primary energy use in relation to gross domestic product (GDP).

In (*Final NECP Sweden*, 2020) an overview of Swedish key policy instruments and measures contributing to achieving the national climate targets to 2030 is given. Below, a selection of the most relevant ones for SMEs are presented, although many of them are not targeted to SMEs only. The ones more specific for SMEs are municipal energy and climate advisory services and grants for performing energy audits. Also, the three energy efficiency initiatives (Incentives for energy efficiency, Energy efficiency networks, Coaches for energy and climate) are directed specifically at SMEs. These are further mentioned under several questions below (and are also described in Chapter 5). The information in the list below is collected from (*Final NECP Sweden*, 2020) and for the current project arranged in the categories Laws & regulations, Information & advisory, Funding schemes, and Initiatives.

Laws & regulations

Energy and carbon dioxide taxes

The Swedish system of taxation on energy is regulated by law and is based on a combination of a carbon dioxide tax, an energy tax on fuels, and an energy tax on electricity.

The Environmental Code and the Planning and Building Act

The Environmental Code gathers the overall legislation in the environmental area, and it shall promote sustainable development. Sweden's national environmental quality

objectives, e.g. Reduced Climate Impact, shall work as a guiding principal when the Environmental Code is applied. The Code also includes requirements to use the best available technology (BAT). For activities subject to a permit assessment (such as larger environmental hazardous activities), direct and indirect environmental consequences as well as energy saving are controlled for. This is the case also for greenhouse gas emissions for activities not included in the EU Emissions Trading System (EU ETS). Public planning is most often governed by the Planning and Building Act, which includes environmental and climate aspects. It also includes requirements on buildings, new as well as refurbished ones.

Building regulations

The building regulations from the Swedish National Board of Housing, Building and Planning (Boverket) works together with The Planning and Building Act, and cover areas such as safety, health, noise, environment, energy saving, etc.

Energy declarations

Energy declarations are regulated by law and is required for buildings when sold, rented or newly built as well as for larger buildings often visited by public. It includes information about the building's energy use and suggested energy efficiency measures.

Information & advisory

Climate change communication

A number of Swedish authorities are informing the citizens as well as business and public sector on climate issues.

Regional Climate and Energy Strategies

The County administrative boards coordinate regional climate and energy initiatives and in collaboration with other regional and local actors, they design regional climate and energy strategies based on the Swedish climate and energy policy goals. In addition, they contribute to several other areas, such as environmental assessment and surveillance.

Energy and climate advisory services

The Swedish Energy Agency (SEA) provides financial support to municipal energy and climate advisory services directed to households and small enterprises, for example. The information is free of charge, objective and locally adapted. SEA also provides financial support to 15 regional energy offices, which coordinate the energy and climate advisors. The energy offices initiate and participate in projects on energy efficiency and renewable energy sources as well as cooperate regionally on for example plans and strategies.

Educational programs for energy efficient buildings

The Swedish Energy Agency (SEA), together with other actors, give programs for capacity building within the area of energy efficient buildings.

Funding schemes

Grant for energy audits
SMEs are entitled to applicate for the grant, that at a maximum can be 50 % of the energy audit cost at the company and not over 50,000SEK. The energy audit should also contain suggested measures and an energy plan.

Climate Leap (Klimatklivet)
Since 2015, all types of organizations can apply for grants for local investments to cut greenhouse gas emissions. However, investments in sectors included in EU ETS are normally not eligible for grants.

Initiatives

Incentives for energy efficiency
Advisory service directed to SMEs covered by environmental regulation and therefore under control according to the Environmental Code. The environmental inspectors from the County administrative boards or the municipalities provide energy efficiency support.

Energy efficiency networks
Network project directed to SMEs on energy management, with support from regional coordinators and energy experts.

Coaches for energy and climate
Project based on coaching activities especially directed to SMEs, with the aim of increasing energy efficiency and decreasing climate emissions.

Fossil Free Sweden (Fossilfritt Sverige)
The initiative aims at strengthening the dialog between the Government and different actors working for a fossil free world. Roadmaps for fossil free competitiveness has been developed for different business sectors.

Networks and innovation clusters for the building sector
Support for market introduction of energy efficient methods and technologies for use in buildings. Provide arenas for testing, introducing and evaluating new technology, as well as collaborative platforms for sector stakeholders, authorities and research.

Regional / local level
There are no specific policies or regulation on the regional or local level within this area in Sweden. There may be regional or local initiatives or targets. However, since

there will be no project use case in Sweden, and thus no specific region identified, only the national level is described (see above).

Existing regulation and obligations for SMEs

The most obvious regulation is the Environmental Code, see above. According to the Code, all operators shall apply energy saving and primarily use renewable energy. In more detail, this is specified as gaining knowledge on the energy use as well as identifying measures and continuously implementing reasonable ones (*Final NECP Sweden*, 2020). As already described above, the Code also includes requirements to use the best available technology (BAT).

The Swedish Planning and Building Act (2010:900) together with the building regulations from the Swedish National Board of Housing, Building and Planning (Boverket), state requirements on maximum energy use in all new and refurbished buildings (*Final NECP Sweden*, 2020). For buildings used as premises for public and private functions (not residential), total primary energy use should be 80 kWh/m^2 or lower. For all buildings that are sold, rented or newly built, the law on energy declarations (2006:985) regulates that an independent expert should issue an energy declaration (*Final NECP Sweden*, 2020). The energy declaration is valid for 10 years, and it includes information about the building's energy use and suggested energy efficiency measures.

Incentives

Financial incentives

Energy and carbon dioxide taxes, see above.

Supportive incentives

Energy Efficiency Networks (EENet): EEnet is a Swedish, national initiative, which is set-up as a time-limited project, co-funded between the Swedish Energy Agency (SEA) and the National regional fund programme (financed by the European Regional Development Fund). Further, there are about 20 regional organisations - regional authorities (County administrative boards) or regional energy offices - involved in the initiative. The initiative is specifically targeted towards SMEs with an annual energy consumption above 1000 MWh. SMEs from all types of sectors have been eligible for participation. The initiative started in July 2015 and runs until the end of 2020. Within the initiative, in total, 34 local/regional energy efficiency networks with between 8 and 12 participating companies have been initiated, set-up and run for about four years (43 networks were originally initiated, but only 34 have been running for the entire period). In total, 386 SMEs have been involved at some time during the project. In 2020, 243 SMEs were still fully active.

- Coaches for Energy and Climate (CEK): CEK is a Swedish, national initiative, specifically targeted towards SMEs with an annual energy consumption below 300 MWh. The CEK project combines coaching and knowledge transfer

between participating companies. This aims at providing the companies with valuable tools to improve their energy efficiency. The CEK project has a clear capacity building aim, where one goal is to establish collaboration between energy and business competences at the local level, to strengthen the abilities to coach SMEs towards competitive energy efficiency solutions. The coaches are available in 130 Swedish municipalities, which allows for a local embedment and coaching. The participation in the programme is free of charge for the companies and funded by the Swedish Energy Agency through the European Regional Development Fund.

Incentives for Energy Efficiency: Incentives for Energy Efficiency is a Swedish, national initiative for energy efficiency support to companies covered by environmental regulation. This means that it is a project to improve the energy efficiency support (and control) provided by environmental inspectors, according to the Swedish Environmental Code (see above). Within the first phase of the project a range of methods, tools, educational and communication material on energy efficiency have been developed, with the purpose to serve as a resource for personnel at inspection authorities in their contacts with SMEs. This material was developed mainly by a few of the regional authorities. In the next phase of the project, the developed material has been communicated and disseminated through seminars with the rest of the regional and local authorities in order to build competence and capacity in energy efficiency. Currently, environmental inspectors have just started using their new competences and tools to help and support SMEs. The project will be finalized and evaluated in 2021. The goal is to reach 1500 SMEs in the country.

Innovation Clusters etc. for the building sector: In order to support market introduction of energy efficient methods and technologies for use in buildings, the Swedish Energy Agency (SEA) coordinates innovation clusters for commercial, public and rented premises and for food distribution (*Final NECP Sweden*, 2020). These innovation clusters provide arenas for testing, introducing and evaluating new technology, and as collaborative platforms for sector stakeholders, authorities and research. Further, the SEA and Boverket develops a range of educational and informational activities, including programs for capacity building within the area of energy efficient buildings, and an information centre (ICHB) for sustainable construction from energy efficiency and climate impact perspectives. Also, a long-term strategy for renovation of buildings, in accordance with the EU Energy efficiency Directive (2012/27/EU), is under development by the two Swedish authorities, National Board of Housing, Building and Planning (Boverket) and SEA (*Final NECP Sweden*, 2020).

Other

Regional energy offices and municipal energy and climate advisors provide supportive services and advisory to the SMEs (see above), but no direct energy efficiency incentives.

Obligations or incentives that apply only to certain sectors

As described above, there are incentives and regulations/obligations for the building sector with regard to the whole chain of phases from construction to usage.

Also, the Swedish Energy Agency (SEA) has identified five sectors to be in focus for the "Sectoral strategies for energy efficiency" that the Government initiated in 2017 (*Final NECP Sweden*, 2020). A dialog on appropriate guiding objectives and measures for the sectors to contribute to the 2030 energy target of 50 percent more efficient energy use will be included in the assignment. Strategic areas for the five sectors are 1. Fossil free transports; 2. World class production; 3. Flexible and robust energy system; 4. Future trade and consumption; 5. Resource effective buildings. For the GEAR@SME project focusing on SMEs, number 2 and 5 are probably the most interesting. However, the strategies are so far not linked to any specific incentive programs.

Self-obligations / self-regulatory mechanisms

Linkage of incentives / obligations / self-obligations to specific targets

At an overall level, there are the targets described by Sweden's national climate policy framework and Sweden's national energy policy (which implies that Sweden's total energy use is to be 50 percent more efficient by 2030 compared to 2005).

There are, however, project targets for efficiency improvements within the specific SME initiatives of EENet and the Coaches project. The target in EENet is that participating companies should increase their energy efficiency by 15% during the project period (2017-2020). The target for the Coaches initiative was that 80 % of participating companies should reduce their energy use by at least 10 %. For the project Incentives for Energy Efficiency there were no direct energy targets included, but targets were set with respect to the number of SMEs that should be contacted.

Assessment of obligations, incentives and self-obligation

According to (*Final NECP Sweden*, 2020), statistics from the Swedish Energy Agency (SEA) show that the 2030 energy target of 50 percent more efficient energy use were about half-way met in 2017. This means that the target could be fully met by 2030 if the development continues at a similar rate.

The Energy Efficiency Networks (EENet) initiative has not yet been finalized, but at the latest evaluation of results (with one year left of the program), an overall energy efficiency improvement of 11 % was achieved, and there were further identified and planned measures that indicated that the targets could be met by 2020. However, with the special COVID-19 situation during 2020 this might change. In total, this programme has been successful (see also Chapter 5).

For the Coaches for Energy and Climate initiative there is not yet any quantitative evaluation available. However, the project so far has shown to provide valuable lessons and insights for the coaches through their embedment in the local and regional environment of the companies.
The Incentives for Energy Efficiency initiative will be evaluated during 2021.

Best-practice example for other countries
The Energy Audit funding scheme (Grant for energy audits), which partly funds the implementation of an energy audit in an SME has been important to promote energy efficiency in SMEs, and was applied for (and received) by a relatively large number of SMEs. This scheme has also been an important element in the implementation phase in EENet and the Coaches project, since the networks there has supported the SMEs in applying for funds, commissioning an energy audit, interpreting its results and then going forward with implementation.

In total, the EENet project has proven successful in achieving both its quantitative and qualitative targets. This is described in detail in Chapter 5. The Coaches project is also potentially as interesting (see same chapter). There is, however, not yet as much information available, since the continuous evaluation has been less systematic.

Correspondence of policies, objectives and incentives to the GEAR@SME approach
EENet as well as Coaches for Energy and Climate both correspond to the GEAR@SME approach, see Chapter 5 for more details.

8.5.2 Funding schemes

Funding schemes aimed at energy efficiency in SMEs include primarily grants for energy audits that can be applied for by SMEs, see above. According to (SEA, 2020a), the project is ongoing until 2021 and the current application period ended on April 30th, 2020. Another funding scheme (however, not aimed at SMEs specifically) is the Climate Leap (Klimatklivet), see above.

Further, there are financial supportive elements within the energy efficiency initiatives described above. All these initiatives are further described in Chapter 5.

- Within EENet, the participating companies pay an annual fee (of about 1,000 Euro), but receive then access to the network and support from energy experts for up to about 40 hours, corresponding to in the region of three times the fee paid.
- Within the Coaches project, advice and support given is free of charge.
- Also, the advice given by environmental inspectors (which has been developed through the initiative Incentives for Energy Efficiency) are free of charge for the SMEs. However, since this is part of the authorities' control system it could be argued whether this can be categorized as support or not.

According to (*Final NECP Sweden*, 2020), the National regional fund programme (financed by the European Regional Development Fund) gives financial support to several efforts directed to SMEs and operated by The Swedish Energy Agency (SEA), such as the ones already described above (Grant for energy audits, EENet, the Coaches project, the Incentives for Energy Efficiency initiative) but also investment support for energy efficiency measures identified through an energy audit (Technical development and innovation). However, according to (SEA, 2020b), the application period for this investment support (and for grants for environmental studies) ended during the autumn 2019. Also, for investments in companies in early phase with products and services contributing to climate change mitigation, there is the green fund, managed by ALMI Invest AB (*Final NECP Sweden*, 2020). The European Regional Development Fund also finances eight Swedish regional programmes, which among others, have included energy efficiency projects for SMEs with collaboration between companies, universities, regions, municipalities, etc. (*Final NECP Sweden*, 2020). Also, on EU level, the energy efficiency instrument (EEFF) offers economic funding for improvements in the energy use of buildings (*Final NECP Sweden*, 2020).

Supported activities
See above.

Linkage to specific targets
Not any other obvious target than described by Sweden's national climate policy framework and Sweden's national energy policy.

Accessibility of funding
Grant for energy audits: The economic incentive works well but the communication needs were not met by just providing the grant itself. This is one reason why additional initiatives were taken that (amongst others) could support SMEs in applying for the grant. As described above, this was the case in EENet and the Coaches project. The regional energy offices can also provide help with such applications.

Best-practice example for other countries
There are good examples but no best-practice.

Correspondence of funding schemes to the GEAR@SME approach
We cannot see any direct linkages between the funding schemes and the GEAR@SME approach. The schemes (like Klimatklivet) do not directly encourage joint efforts, but funding can be applied for in relation to measures that include joint efforts. However, as energy audits are part of the energy efficiency work that the GEAR@SME approach aims at, the funding scheme Grant for energy audits contributes to the approach in that sense.

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Annexes

Annex A. Questionnaire used for T2.1

Below, the questionnaire for project partners regarding the role of the SME sector, current energy efficiency support initiatives, and important factors for closing the demand-supply gap.

The role of the SME sector in partner countries
Give a short overview of the SME sector in your country, including:

- size of the sector in relation to overall industry and economy
- dominating SME business segments etc.
- main stakeholders involved in energy efficiency in SMEs
- other relevant information on the SME sector?

Current energy efficiency support initiatives in partner countries
Describe the most important examples of energy efficiency support initiatives for SMEs in your country. Focus mainly on initiatives which has some sort of collective approach on national or local level, similar to the ones the GEAR@SME project strives for.

A. For each example, give first a brief neutral presentation of the energy efficiency support initiative. Focus on current practices, e.g. initiatives from the last 5, or maybe 10, years. Among other things, include basic facts about scope and orientation of the initiative. For example, to whom is it directed and in what way is it relevant for SMEs? What is the size of the initiative in form of the amount of companies addressed (in the initiative as a whole and in each participating network etc.)?
B. Then, describe the set-up of the energy efficiency support initiative from the GEAR@SME perspective.

1. Identify and describe the actors and their role in the initiative.
   - SMEs: Type of SMEs (company size, small or large energy consumers, same or different business segment, etc.)
   - Energy service providers: Type of provider (auditors, energy advisors, ESCOs, technical experts, etc.)
   - Trusted partner: Did someone act as a Trusted partner and in what way?
   - Multiplier organizations: Were there any Multiplier organizations involved in the project (before, during, after)? For example, has the initiative inspired to new ones and in that case, which stakeholders has made that happen?
   - Other: Were there any other actors involved, and in that case in what way?

2. Show how the actors of the energy efficiency support initiative were organized in relation to each other.
   - Which of the actors were clearly organized and in what way?
   - Were the actors organized as an energy efficiency network of any kind?
   - Were the SMEs collaborating in a trade organization or similar, through which the cooperation on energy efficiency was only one among many areas of cooperative efforts?
   - Were the SMEs in a geographic proximity to each other or not?
   - Did the initiative include other organizing aspects of importance?

3. Explain how the SMEs were activated to participate.
   - Were multiple benefits involved?
   - Were there any direct financial incentives to participate?
   - Were there any legal or regulatory requirements to participate?
   - Were activation efforts tailored to the SMEs, and in that case how? For example, were different messages and/or communication channels used for different SME segments?
   - Did the initiative include any surveys on motivation at SMEs?
   - Were the SMEs activated to participate in any other way than asked for above?
   - Were there any specific efforts to activate other actors than SMEs?

4. Present how the different actors were enabled to perform their task, respectively.
   - What skills were already in place?
   - What new knowledge was required due to the initiative arrangement?
   - Were there any other enabling activities present?

5. Describe if and how the initiative has been embedded.
   - Has the initiative been embedded in e.g. the local context of which the SMEs operate, and in that case how?
   - Specific findings on effective ways to embed energy efficiency support initiatives?
   - Was the initiative embedded in any other way?

C. Finally, highlight and describe possible successful outcome of the initiative as well as shortcomings. If possible, include explanations to these. If the initiative was monitored and measured in any way (e.g. in terms of energy savings, or number of SMEs reached), this can be described here.

Important factors for closing the gap in partner countries

What factors do you believe, from your experience, are the most important for bridging/closing the demand-supply gap for energy efficiency in SMEs in your country? Consider the whole range of energy services resulting in implementation of energy efficiency measures. Base the information on the initiatives described in previous chapter as well as on your experience in general.

- Why is there a gap between SMEs (demand side) and providers of energy services (supply side)?
- Which are the strongest barriers to overcome for bridging/closing the demand-supply gap?
- Are there any leverage points, i.e. crucial aspects for bridging/closing the demand-supply gap?
- Which are the strongest drivers for bridging/closing the demand-supply gap?
- Other important factors for bridging/closing the demand-supply gap?

Annex B. Questionnaire used for T2.1 (Multiplier organizations)

Below, the questionnaire for multiplier organizations in the project regarding their role and important factors for closing the demand-supply gap.

The role of Multiplier organizations in partner countries

Give a brief presentation of your company/organization etc.

Describe your role and experience of being a Multiplier organization for energy efficiency support initiatives for SMEs in your country. Focus mainly on initiatives which has some sort of collective approach on national or local level, similar to the ones the GEAR@SME project strives for.

Important factors for closing the gap in partner countries

What factors do you believe, from your experience, are the most important for bridging/closing the demand-supply gap for energy efficiency in SMEs in your country? Consider the whole range of energy services resulting in implementation of energy efficiency measures.

- Why is there a gap between SMEs (demand side) and providers of energy services (supply side)?
- Which are the strongest barriers to overcome for bridging/closing the demand-supply gap?
- Are there any leverage points, i.e. crucial aspects for bridging/closing the demand-supply gap?
- Which are the strongest drivers for bridging/closing the demand-supply gap?
- Other important factors for bridging/closing the demand-supply gap?

Annex C. Questionnaire used for T2.3

- **Tool Category. Possible options:**
  - ENERGY AUDIT TOOLS: essential throughout the process of energy efficiency;
  - TRAINING TOOLS: for both demand and supply side actors;
  - EDUCATIONAL TOOLS: providing a basis for training;
  - SUPPORT CHANNELS: play a key role as “helpdesk” by supporting SMEs in improving energy efficiency;
  - OTHER: any other tool that does not refer to the above categories

  It is also possible to specify whether it is also a Capacity Building Tool (raising enterprises' energy awareness and bridging the demand-supply gap for energy efficiency in SMEs).

  Reason why this information item is included:
  For the further develop of GEAR@SME Project, is important to identify these type of tool divided by category. This is the starting point for others materials that will be elaborate.

- **Tool Name or Support Channel name**

- **Source of the available tool (and link to the tool)**
  The context where the tool has been developed (e.g. an H2020 Project, a national/regional project or any other initiative) in order to identify the main features of the tool and “the place” (i.e. the link) where it can be accessed. It is also requested to provide the link to the tool.

  Reason why this information item is included:
  The idea of GEAR@SME is to provide tools that are already proven successful in earlier research projects or policy programmes. It is also important to schedule tools that are readily available within the consortium. The concept of the “available tool” is understood as being usable online free of charge.

- **Country where the tool has been developed and geographical area of application**
  This information allows understanding how widespread the tool is (e.g. one country only or more) and in which language(s) it is available.

  Reason why this information item is included:
  This first overview is the basis for the further development of GEAR@SME concept. Indeed, only the tools that are most promising to provide enabling support both for demand and supply side will be converted, adapted and improved afterwards. For this reason, it is important to understand how widespread the tool is at the EU level.

- **Developer/Owner**
  This item aims to specify both the developer and the owner of the tool. If the developer and/or the owner is not in the consortium but it is another country/partner or entity, it is requested to specify the developer, the owner, and the link/contact person who can provide the tool.

  Reason why this information item is included:
  In order to evaluate the availability of the tool, it is important to know if the developer/owner (if it is not within the consortium) could provide the tool, if it has not already been done, for the GEAR@SME scope.

- **Tool Typology. Possible options:**
  - ASSESSMENT TOOLS: of energy efficiency in SMEs;
  - SELF ASSESSMENT TOOLS: easier tools to measure energy efficiency, that can be applied by SMEs themselves without support from professionals;
  - ENERGY MANAGEMENT TOOLS: enable users to understand how energy is consumed within their process and how they can improve the use of energy resources for effective task processing;
  - MONITORING TOOLS: a tool that uses both historic and future energy data to support the identification of energy efficiency measures and to monitor the energy (and cost) savings;
  - PROCESS TOOLS: useful for energy efficiency improvement in SMEs (e.g. decision-making and capacity building of Trusted Partners);
  - QUICK SCAN TOOLS: for quick energy audits.
  - BUSINESS CASE TOOLS: they are designed for groups of SMEs.

  Reason why this information item is included:
  To support the common methodology of GEAR@SME, will be provided, by the consortium, a toolset, accessible via a common portal. This toolset will be the result from an adaptation, connection and improvement of the tools that already exist. At this stage, with a view towards the final objective, is necessary a detailed overview of the existing tools. This selection, as well as some of the following requests, aim to analyse in more detail the characteristics of each tool.

- **Tool Aim**
  This item is to describe the main aim(s) of the tool. Each tool can have different aims. For example, a quick-scan tool can be used both for a quick energy audit before or after interventions and prior to collective investment decisions.

  Reason why this information item is included:
  It is requested a short description of the major aim of the tool in order to provide the detailed overview explained in the previous point (Tool Typology)

- **Beneficiary(ies) of the tool**
  Beneficiaries are those for which the tool has been designed and to whom the tool has been addressed: those who will benefit from the application and the results provided by the tool itself. Each of the four beneficiary "category" includes different professional figures: in SMEs for example, they can be either Responsible of energy efficiency in the company (such as internal Energy Auditor or Energy Manager) and boardroom members (e.g. CEO or CTO). The public sector and local authorities can be considered as beneficiaries in relation to their support of the energy efficiency enhancement of SMEs.

- **User(s)**
  People who concretely use the tool and complete the data fill-in. They have the capability to analyze and evaluate the results/outputs provided by the tool. For example: a tool may be targeted to (have as beneficiaries) boardroom members in the SME, but the User may be the Energy Manager or an external expert (supplier) in the domain.

  Reason why this information item is included:
  One of the main objectives of the Overview is to provide support to both SMEs and suppliers to cooperate on energy efficiency. The previous two points (Beneficiary(ies) of the tool and User(s)) are closely connected but they do not have the same meaning. It is important to maintain this distinction for the further development of the GEAR@SME toolset.

- **Addressed to Individual SME/Addressed to collective of SMEs**
  Whether the tool is addressed to one SME only or to a Collective of SMEs, i.e. a group of enterprises with common targets for energy efficiency improvements, if possible, in local proximity.

  Reason why this information item is included:
  The GEAR@SME concept aims to develop a local collective approach to energy efficiency in SMEs, based on geographic proximity. It therefore becomes relevant to define whether the tool has been designated for Individual SME or Collective of SME's.

- **In which form the tool is available.**
  It is requested to specify if the tool is available as an interactive instrument, a printable document or other.

  Reason why this information item is included:
  Further information for the detailed overview.

- **Scope of the tool within the Activate-Organize-Enable logic.**
  Possible options:
  - ACTIVATE: The Trusted Partner identifies SMEs and suppliers and develops tailored communication with the help of the Consortium training.

- ORGANIZE: with the assistance of the Consortium, the Trusted Partner builds a local community of SMEs, selects and engages suppliers, takes initiative in connecting demand and supply.
- ENABLE: SMEs and Suppliers are provided with a toolset to assist SMEs to assess energy efficiency potential, select measures to be implemented, select auditing partners or tooling, select implementing partners. Through Training the Trusted Partner is provided with the expertise to be an intermediary between demand and supply side

Reason why this information item is included:
This categorisation will be an important element in the definition and development of the GEAR@SME methodology that revolves around this concept.

- **Brief description of support channel**
  Support channels are entities supporting SMEs with running their business, including (but not necessarily focusing on) sustainability issues. Examples include an "sme helpdesk" at the local municipality, chamber of commerce, trade unions, or informal structures such as local networks of SMEs that have already developed to achieve common goals, e.g. improve safety on the business park. But also, for example executive government bodies who offer support to SMEs on energy efficiency.

- **Main Features of the Item (tool or support channel).**
  4 sub-items to be supplied (qualitative information about the tool):
  - INPUT DATA: Data to be filled in to make the tool works (e.g. Size of the SME, main features of the SME (number of employees, number of working hours in one year), electric energy consumption; self-consumption of energy, fossil fuel consumption, availability of renewable energy sources, data about ventilation systems, etc.)
  - OUTPUT DATA: Which results the tool give in Output Data (e.g. GHG emissions, energy savings, payback time of the interventions, yearly photovoltaic panels production, suggestions on how to improve the current plants/systems/processes etc.)
  - ADVANTAGES: what are the strengths of the tool (e.g. such as short calculation time, graphical Output Data easy to understand, results exportable in many formats (.xls, .pdf, .txt), software targeted for a specific SME segment, etc.)
  - DISADVANTAGES: where the tool can be improved (e.g. long calculation time, lack of economic analysis about possible energy efficiency interventions, etc.)

  Reason why this information item is included:
  To laying the foundations for the further work and develop of the GEAR@SME toolset, these specifications are essential.

- **Remarks**
  (please specify the results achieved by means of tool i.e. in earlier research projects or policy support programmes, if available). This space allows to add important information about the tool.

  Each collected tool, together with its relevant information, has been synthesized in a self-explaining table. In the following sub-chapters, each tool/table is presented, country per country.

Annex D. Questionnaire used for T2.4

Below, the questionnaire for project partners regarding policies and funding schemes.

Objective of this task:
The objective of this task is to analyse and identify policies, regulation and funding schemes in the participating countries that and regions support or hinder SMEs in tackling energy efficiency, specifically conducting audits and implementing energy efficiency measures. Special focus will be given to the question whether the GEAR@SME approach is supported by the policies and funding schemes.

Your contribution:
Please describe national policies, regulation and funding schemes. For regional policies, regulation and funding schemes, please focus on the regions that you will be active in within the project. Please feel free to add remarkable policies, regulation and funding schemes from other regions, if you think that they should be mentioned in this analysis.

A) **Please answer the following questions / describe the situation in your country regarding policies and regulation on energy efficiency in SMEs.**
   1. What policies are in place with regard to energy efficiency in SMEs? Are there targets set (for specific sectors)?
      a) National level
      b) Regional / local level
   2. What regulation is there and what obligations do SMEs have?
   3. What incentives are there?
      a) Financial incentives
      b) Supportive incentives
      c) other
   4. Are there obligations or incentives that apply only to certain sectors? If yes, please describe.
   5. Are there self-obligations / self-regulatory mechanisms that have been installed? If yes, please describe.
   6. Are these incentives / obligations / self-obligations linked to specific targets?
   7. Please assess whether the obligations, incentives and self-obligation achieve the targets set. If there are no targets, please assess their success according to your opinion.
   8. If you consider a certain policy, regulation or incentives in your country to be successful, please describe it in more detail, so that it can serve as best-practice example for other countries.
   9. To what extend do the policies, objectives and incentives correspond to the GEAR@SME approach?

B) Please describe funding schemes in your country and in your region aimed at energy efficiency in SMEs:

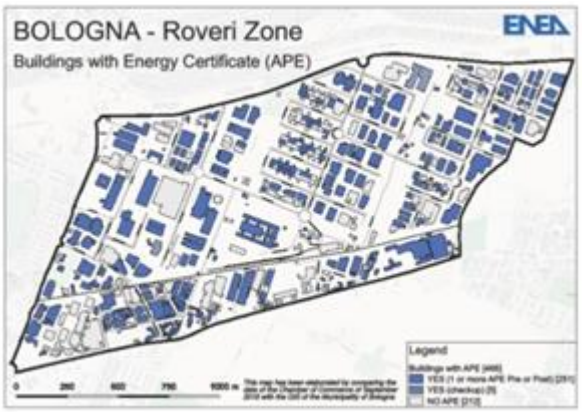
10. What funding schemes are in place with regard to energy efficiency in SMEs?
11. What activities and funding schemes do they support?
12. Are they linked to specific targets?
13. Are these targets reached?
14. Is funding easily accessible, or is it complicated to obtain and use?
15. If you consider a policy, regulation or incentives in your country to be successful please describe it in more detail, so that it can serve as best-practice example for other countries.
16. To what extend do funding schemes correspond to the GEAR@SME approach? Do they, for example, support or hinder joint efforts by SMEs?

Annex E. GIS-map of SMEs in Roveri

An evaluation was carried out by ENEA through the GIS. With the support of trade association, industrial associations, and Public Bodies the following information have been collected:

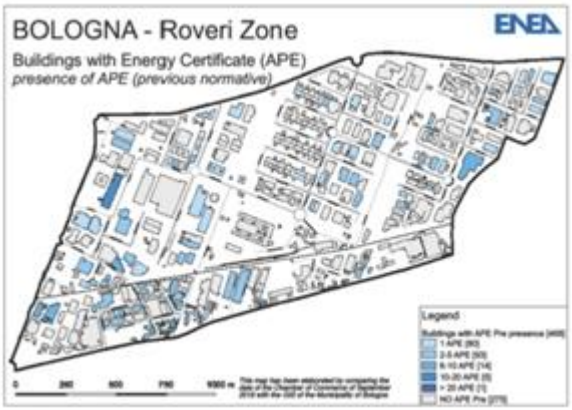
- Number of companies in Roveri area with data updated to 2018 (provided by the Chamber of Commerce of Bologna)
- Integration with the data within the GIS of the Municipality of Bologna
- Simplified check-up of some companies in Roveri area with integration of energy performance data within the GIS (Geographic Information System)

- Energy data through simplified energy check-up on site have been collected
- Then, thanks to support of Emilia-Romagna Region, energy information obtained from the analysis of Energy Certificates (EC) have been added
- Both old EC (before 2015) and new EC (after April 2015) have been used. Then, all data referred to buildings in the GIS. 251 buildings were involved in energy analysis and 839 companies



In recent months, data obtained to implement GIS and with new information have been validated:

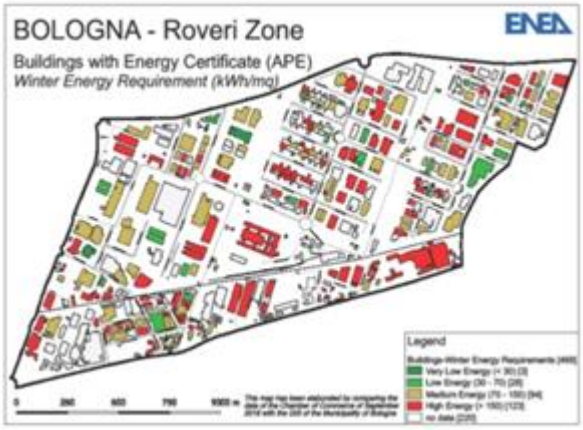
- Validation of data from Energy Certificates
- Evaluation of energy needs for whole Roveri area
- Evaluation of district improvement potentiality.



"APE" classification

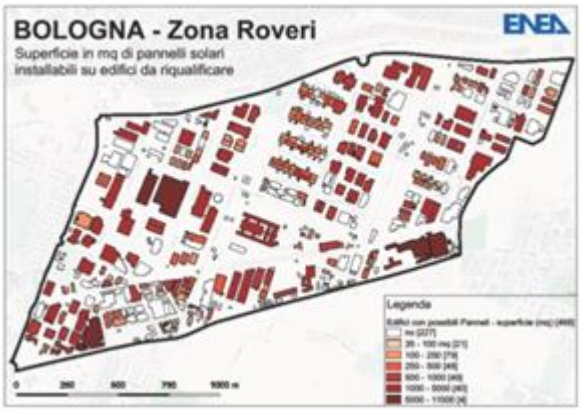
Development of a BEST classification using different colours to identify the different energy consumption classes:

- < 30 kWh/m^{2}y
- 30 ÷ 70 kWh/m^{2}y
- 70 ÷ 150 kWh/m^{2}y
- > 150 kWh/m^{2}y



RES potential production

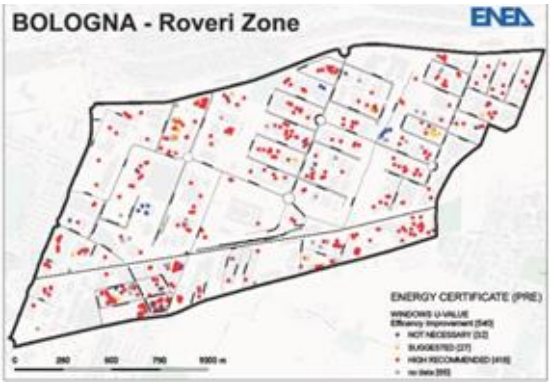
Using GIS, using interface systems with google maps, the existing photovoltaic systems in Roveri area were analysed and potentialities for companies estimated

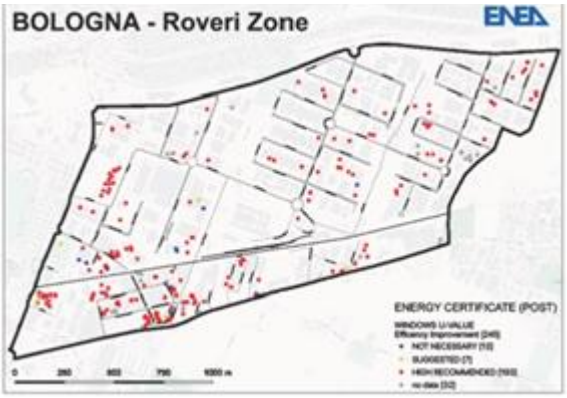


ENEA is working to estimate the potential improvements that can be achieved in heating and lighting systems using Energy Certificates data and it is continuing to work with Confindustria Emilia even after the end of the project (August 2020): the idea is to implement a convention that makes the GIS available to SMEs and to verify if it is effective for them.

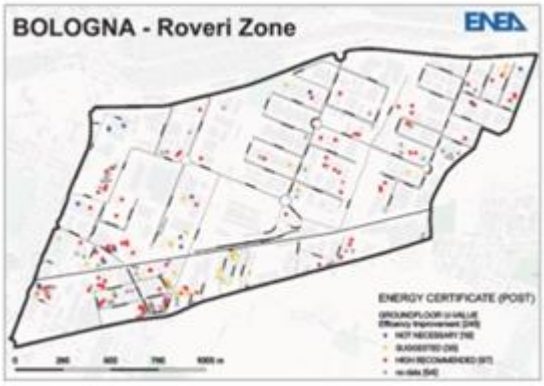
The following figures compare Energy Certificates data on potential improvements in the energy efficiency of the building envelope: suggested and highly recommended improvements are shown in different colours.

Windows

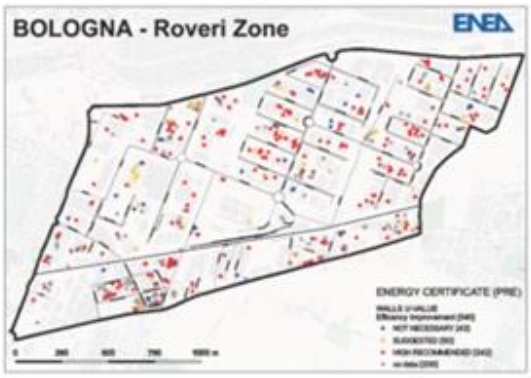


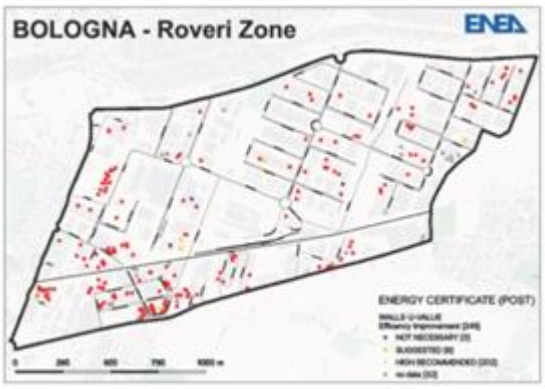


Groundfloor



Walls





Roofs