Energy Efficiency Networks for SMEs - Program Theory and Ongoing Evaluation

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ABSTRACT

It is well known from literature and experienced by practitioners that various barriers are hindering energy management practices and energy efficiency improvements in (industrial) SMEs. With relatively low-cost shares for energy end-use and other priorities, energy management and energy efficiency measures seldom become an area for attention or investments. Consequently, large cost-effective energy efficiency potentials are left untapped. The situation is not pleasing given the European 2020 strategy for "smart, sustainable and inclusive growth", in which energy efficiency is to form a centerpiece with its abilities to provide multiple benefits that goes beyond energy cost savings.

There are good practice examples where SMEs take part in networks and thereby join forces and cooperate to build energy management capacities. For the first time formalized and applied, on a regional level in Sweden, an Industrial Energy Efficiency Network (IEEN) model currently operates with the aim to attract the participation of at least 80 SMEs in ten local networks. An ongoing evaluation approach has been initiated with the main intention to review key activities in project implementation and make proposals for improvements.

As a joint analysis between the project management and the external evaluator, this paper aims to outline characteristics of the particular IEEN model, present intermediate results from implementation and provide further insights from the evaluation. To our awareness, program theory and ongoing evaluation has so far not been applied to IEENs. Our results show that it clarifies the change process and helps to identify unique intermediate results and challenges faced in different phases of implementation. These are important lessons with potential to enhance understanding and improve knowledge dissemination within the community of industrial energy efficiency policy analysts, project developers and evaluators in the Asian-Pacific region.

Introduction

Improved energy efficiency is together with increased resource efficiency key components in the shift towards sustainable, climate neutral energy systems, locally, regionally as well as globally. The total energy efficiency potential in Swedish industry until 2020 has been estimated to 12% (Thollander et al, 2013). For industrial SMEs, the potential is larger. Though there is a large potential for increased energy efficiency this is not realized due to a number of barriers. Other priorities, lack of time, lack of information and insufficient knowledge about potential energy savings are common barriers in industrial SMEs (Thollander and Palm, 2013). One of the primary ways to realize the energy efficiency potential is working with internal energy management and energy audits (IEA, 2012). However, research shows that such energy management practices are underdeveloped in small, non-energy intensive, companies (Thollander and Palm, 2013, Moshfegh et al, 2014). Only half of the viable measures in an energy audit is implemented (Anderson and Newell, 2003).

To address these problems, it has been suggested that companies participate in industrial energy efficiency networks (IEEN), which have shown to double the energy efficiency improvement rate (Koewener et al, 2011). SMEs often lack internal energy management systems but a three-year

participation in an IEEN can provide them with vital services and support such as energy auditing, energy- and investment plans, advice on and implementation of measures as well as monitoring of results.

Research on energy management in local SMEs and energy intensive companies reveals a number of general key factors needed for a company to successfully realize the energy efficiency potential. Some of these factors are a long-term energy strategy, concrete goals for energy efficiency, someone being responsible for the issue, and full support from top management (Johansson and Thollander, 2017; Backlund et al, 2012). Research internationally, nationally, and within the Swedish region of Gävleborg show that these factors are not met in industrial SMEs (Thollander et al, 2013).

In addition to providing energy audits and internal energy management practices, for implementation of viable measures, an IEEN can help SMEs to see the technologies in a wider perspective. The problem of focusing solely on investments in new technologies is to ignore the technology in a wider system. Waide and Brunner (2011) shows that the larger potential of efficient energy use is not in the electric motor itself but in the wider system where the operator and users has a major role in how the engine is used.

Given this introduction to problems and opportunities for energy efficiency improvement in SMEs, this project is pioneering a structured IEEN approach for the heterogeneous segment of SMEs on a regional level in Sweden[1] [2]. Being a novel project, in the regional market and policy context, it makes much sense to evaluate the processes and impacts on-going. External project evaluation is also required by the funders on EU and national level. Thus, an external evaluator has been procured to provide an independent review and gather learnings for potential modifications and potential up-scaling of activities. In this paper, the project management and the evaluator present their joint analysis as the project is about midway through. The aim of the paper is to: 1) describe the theoretical underpinnings and characteristics of the project specific IEEN model; 2) present results related to two key processes, namely the recruitment of SMEs and the operationalization of energy audits and; 3) provide insights from applying program theory and ongoing evaluation to IEENs.

Theoretical Background

Originating from Switzerland in the 1980s, the concept of energy efficiency networks later spread to Germany where pilot energy efficiency networks were established (Jochem and Gruber, 2007; Koewener et al., 2011). In its current stage of development, energy efficiency networks are not only a policy program/concept promoted by governmental bodies, but also the core business model for private companies, e.g. the German Learning Energy Efficiency Networks. Similar approaches related to network management have emanated within the environmental management field where network governance of environmental management in the form of business to business networks are under operation, e.g. in Sweden.

The major stakeholders of an energy efficiency network are (inspired by Paramonova et al., 2014):

- network administrator: administrates the whole program, in charge of evaluation etc.
- network operator: the actual program operator, normally an actor that works close to companies and technical expert,
- participants: the target group of companies from manufacturing or service sector, possibly

[1] The project, with acronym ENERGIG, operates between 2016 and 2018 and is managed by Gävle University (Sweden). The implementation of regional IEENs is one of its main constituents. Funding is granted from the European Regional Development Fund as well as regional partners.

[2] Previous Swedish examples of company networks regarding energy management issues appear to have been loosely structured, often targeted larger and more energy-intensive firms or sectors of manufacturing industry (Paramonova et al., 2014a; Ivner et al., 2014).

also energy service providers that can match their offers to the companies that demand energy services,
- technical expert: expert in charge of energy audits, or reviews of audit results, and supporting the companies in technical assessments etc.

Energy efficiency networks are currently outlined as key policy measures in both Germany and Sweden for improving energy efficiency among industrial SMEs (SEA, 2015).

Early research in the area of environmental network governance includes Ammenberg et al. (1999). Jochem and Gruber (2007) and Koewener et al. (2011) presents results for the German learning energy efficiency networks and represents the first work of energy efficiency networks to the authors knowledge. In Sweden, Paramonova et al. (2014a-b) reviewed occurrences of Swedish energy efficiency networks and Carlén et al. (2016) presented an ex-ante evaluation of the Swedish policy program for energy efficiency networks. Recent literature with international scope includes an overview with descriptions of networks and cooperative initiatives in the so called G7 countries, and more briefly in additional countries (IPEEC, 2016). It is clearly outlined that networks can vary in form and include a range of services and activities. More rigorous types are exemplified in Europe by the German Learning Energy Efficiency Networks (LEEN) concept and in Asian-Pacific region by the Japanese Energy Conservation Neighbourhood Associations (ECNA) (IPEEC, 2016). One important distinction, which is not always made when describing energy efficiency networks, is the one between implementation networks like the LEEN and the Swedish IEEN under study, and information dissemination networks, where the latter are normally larger and focused more on information sharing in wider settings using one-way communication channels (Ivner et al., 2014).

Methodology

A questionnaire was used which was submitted via e-mail to the seven network operators. The questionnaire included open questions about their experiences from recruiting companies to the project, and their perception of barriers and drivers for the companies when it comes to participation in networks.

Quantitative data was collected from energy audit reports from companies and analyzed as a part of monitoring and evaluation. At the time of this paper, six energy audit reports were finished and available. As more energy audits are finished and reports become available they will be included in the future evaluation.

Evaluation approaches and methodologies are elaborated in the section dedicated to this topic.

The IEEN concept

The project specific IEEN concept is provided as a free-of-charge service to participating companies with the basic framework and key activities including[3]:

- last up to three years and hold regular meetings with SMEs for initiating energy audits, formulating goals and action plans, knowledge exchange and follow-up activities,
- are led by a network operator, a coordinator that e.g. schedules meetings and invites energy efficiency experts for advice on technical and energy management solutions,
- systematic energy audits are carried out for free with an innovative audit software,
- a database of energy efficiency measures is made available from which SMEs can harvest experiences from previous industrial energy efficiency programs/projects.

[3] The overall project is funded by the EU Regional Development Fund and the national authority the Swedish Agency for Economic and Regional Growth with contributions from co-financiers.

Figure 1 illustrates the key processes and logics involved in planning, implementation, learning and development of the IEEN concept. Of these, the paper looks closer at key processes involving marketing and communication for recruitment of SMEs as well as actual network operation including energy audit support.

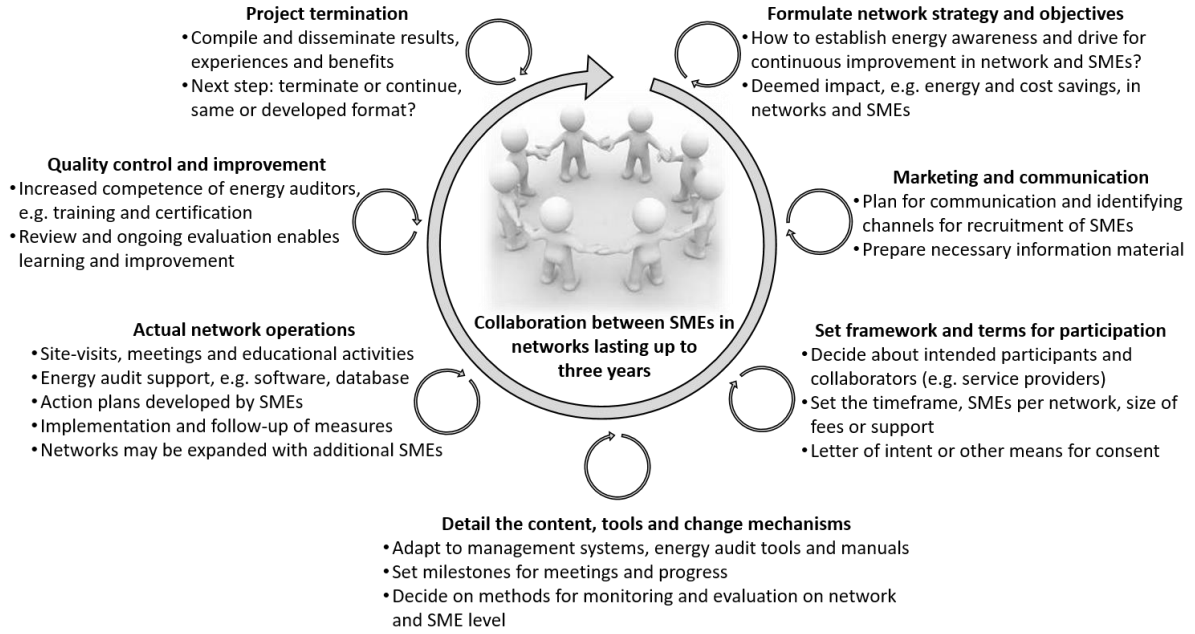

Figure 1. Key processes and logics behind the project specific IEEN concept for SMEs (partly based on Paramonova et al., 2014).

Evaluation approach

Monitoring and evaluation activities aims to contribute with learning and practical results for partners and stakeholders (e.g. the ENERGIG project management and staff, steering committee, funders and participating SMEs). This requires continuous feedback at different levels of ambition, from unilateral communication to joint analysis between evaluator and project team, this paper being example of the latter.

Monitoring of activities and their outputs (e.g. the number of participants at a certain event) is best conducted internally by the project organization. Tasks that belong to the external evaluator is to review goal formulations and intended impacts, underlying assumptions regarding change mechanisms of planned activities, and to judge the merits of project (its impacts and goal fulfillments).

The ambition is to combine a theory-based evaluation approach (Weiss, 1997), which clarifies program/project logic and explores intended change mechanisms, with an ongoing and learning evaluation approach. The latter has been summarized by eight guiding principles (Svensson et al., 2009):

1. is formative, i.e. reviews processes and implementation through participation and dialogue, to enable proposals for changes during the project life time,
2. is introduced early on in project implementation,
3. carried out with closeness to project partners and participants,
4. provides direct benefit to concerned actors,
5. requires continuous exchange at different ambition levels,
6. supports development-oriented learning and common knowledge creation,
7. is partly summative by studying effects and goal fulfillment, while aware of that goals can

change over time,
8. contributes to public debate and knowledge build up.

However, these guiding principles are partly restricted by practical constraints. For instance, there is divergence from (2) as the external evaluator has been introduced about half-way into the project. Obviously, the opportunity for evaluation results to influence project implementation in its different phases will gradually decrease as project resources are spent and important decisions have been taken. External project evaluation is required by the European Regional Development fund and as a rule of thumb around 2 percent of budget should cover evaluation activities. The national funding agency, the Swedish Agency for Economic and Regional Growth, provides the following guidelines for evaluators to adopt (SAERG, 2016):

- **Program logic:** outlines the relations between the project's planned activities and deemed impacts for goal fulfilment; the model tests the plausibility of causal chain of events and underlying theories of change.
- **Process:** how the project is expected to contributed to regional and long-term impacts that persist after the project is finished.
- **Public debate:** how communication is used to learn about and disseminate project result, both within and outside the project organization.
- **Key activities:** activities vital for successful project implementation, which outputs and impacts lead towards goal fulfilment.
- **Key persons:** persons, within or outside the project organization, that possess knowledge and/or abilities to influence and contribute to impacts and goal fulfilment.
- **Key indicators:** quantitative data or information that support qualified assessments regarding impacts and goal fulfilment.

Thus, as a starting point the evaluator clarified the program logic of ENERGIG and the particular processes involved in the IEEN implementation (see Figure 1). The program or project logic model, presented in the appendix, identifies and arranges important projects components into a single page (e.g. pre-conditions, resources, key-activities, goals, targeted outputs and deemed impacts). It should create a common ground and understanding about what the ENERGIG project is intended to achieve and how (e.g. by what means?).

Results

Recruitment of companies

Based on the experience from the team members and initial bad experience with marketing the IEEN towards potential participants by only telephone, a major shift in marketing approach was made. Instead, contacts were taken with the potential network participant through a short-telephone call (rarely also via email), but with the aim of setting up a physical meeting. Then a physical meeting was held at the company site. At that meeting, the network approach was shared and discussed. This was done with one exception, were one very experienced network operator successfully carried out marketing only by phone. The reason for forming networks locally, i.e. a networks physical boundary is the municipality, was previous successful experience in Sweden with this approach further strengthened by early findings by Persson (1990). Due to unsuccessful marketing, i.e. not many companies willing to join, companies from two municipalities located close to each other formed one network.

A total of 156 companies were contacted to receive information about the networks project and given the opportunity to participate in a network. The companies were contacted by the operator in their local network. Initial contact was made by phone and some of the operators provided personal

information meetings before the network start-up. Eventually 44 of the companies accepted the offer to participate in the networks in their municipality. Table 1 shows the number of contacted and participating companies in the included municipalities.

Table 1. Contacted and participating companies in the municipalities

Municipality	Contacted companies	Participating companies	Output (%)
Gävle	18	7	39%
Ljusdal	26	3	12%
Hudiksvall	37	15	41%
Sandviken	17	9	53%
Bollnäs/Edsbyn	29	5	17%
Söderhamn	29	5	17%
Total	156	44	28%

Barriers. A number of barriers to recruit companies has been reported from the network operators where the first barrier to overcome was in the initial phone contact. The operators encountered problems getting in touch with the responsible person, resulting in multiple calls and messages, often with no result. Once contact was established, the lack of time in the companies has been a major barrier for companies to participate. The lack of time and the high workload makes is difficult to appoint someone responsible for the issue. Operators has seen that companies value their energy efficiency potential too low to spend time on energy efficiency improvements, and prioritize the issue. Another barrier experienced in the recruitment was the fact that SMEs often is a part of a larger corporation where the SMEs are restricted to follow the decisions made in the corporate group management.

Drivers. As for the companies entering the networks there are some general drivers to participate. According to the operators responsible for the recruitments the companies all have an overall interest in energy related issues and have a desire to both be contributing to a more sustainable development in the region by decreasing their environmental impact but also to strengthen their brand name. The operators have seen that SMEs tend to be skeptical to technical consultants but perceive the University, which in this case is the network administrator, as a trustworthy actor. Since SMEs in many cases lacks dedicated managers in relation to energy, they have seen reasons to participate in the networks project. The network operators said that the companies showed more interest and to a greater extent decided to participate when the opportunity was framed as a research project at the University, rather than a project aimed at reducing energy costs. The meetings with other SMEs where knowledge and information is shared and the education from expertise (stand-alone, mostly technology oriented, lectures by specialist) has been another important driver for the companies to join the project.

Energy audits

Energy audits from six companies participating in EENs were reviewed. The companies were all active in the mechanical engineering sector, but differed in size and annual energy use. Table 2 shows details about the companies. The companies are not all from the same network and the audits were not carried out by one and the same auditor. The audits in company 1, 2 and 3 were carried out

by auditors with little or no experience from previous energy audits, auditor in company 4 and 5 was unexperienced but had support from experienced auditor and access to a database covering energy efficiency measures from 713 companies in Sweden. An experienced auditor made the energy audit in company 6.

Table 2. Companies included in the energy audit review

	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6
Sector code NACE rev.2	2561	2562	2562	2562	2594, 4674	2822
Employees (2016)	4	9	27	25	57	102
Electricity use (2016)	1 030 MWh	191 MWh	800 MWh	475 MWh	1 370 MWh	1 900 MWh
Other energy supply (2016)	-	145 MWh*	-	40 MWh* 7 MWh**	650 MWh* 208 MWh***	610 MWh* 294 MWh**
Total energy use (2016)	1 030 MWh	336 MWh	800 MWh	522 MWh	2 228 MWh	2 804 MWh
Usable area	962 m^2	2 000 m^2	4 700 m^2	1 900 m^2	12 000 m^2	7 500 m^2

* Oil
** Diesel
*** LPG

In the audits, the number of recommended and quantified energy efficiency measures per company varied between 2-9, resulting in an energy efficiency potential ranging from 3% to 36% per audited firm, see Figure 2. Notably the number of suggested measures were higher when auditors had access to a database or when made by an experienced auditor, while the energy efficiency potential was not related to the number of suggested measures and varied greatly between the six energy audits.

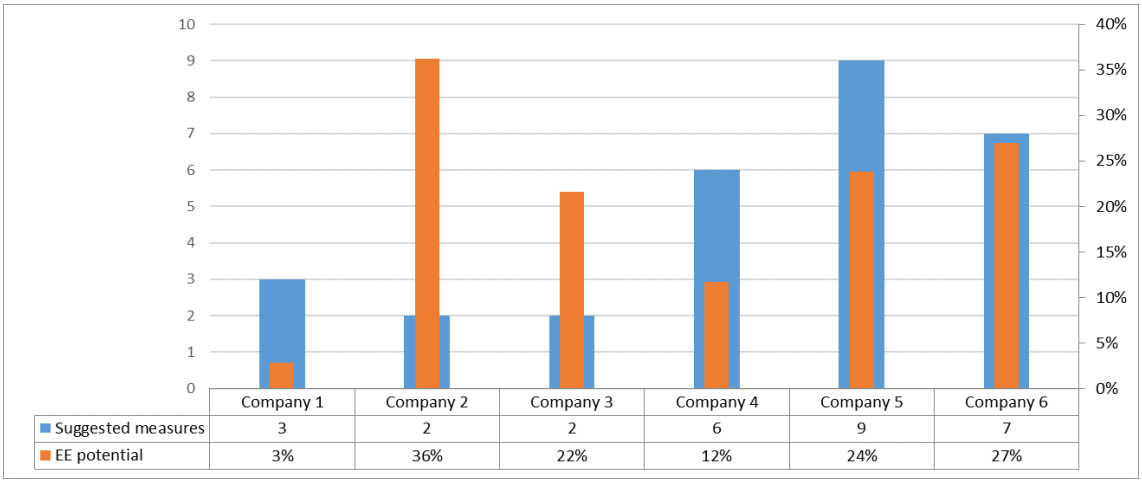

Figure 2. Number of suggested measures in energy audits and energy efficiency potential

The majority of the measures recommended in the audits were related to lighting, see Figure 3. Auditors with no access to a database only suggested new efficient light sources while auditors with access to the database recommended lighting system solutions such as to install detectors or timers and to consider whether current installations of luminaries are needed. The second most recommended measures were related to other production processes followed by measures regarding compressed air. Out of the 29 recommended measures in the audits, only one was related to

production processes. The low number of suggested measures for production processes could be explained by the complexity of the processes, the risk of interruption of production or the auditors lack of knowledge of the processes.

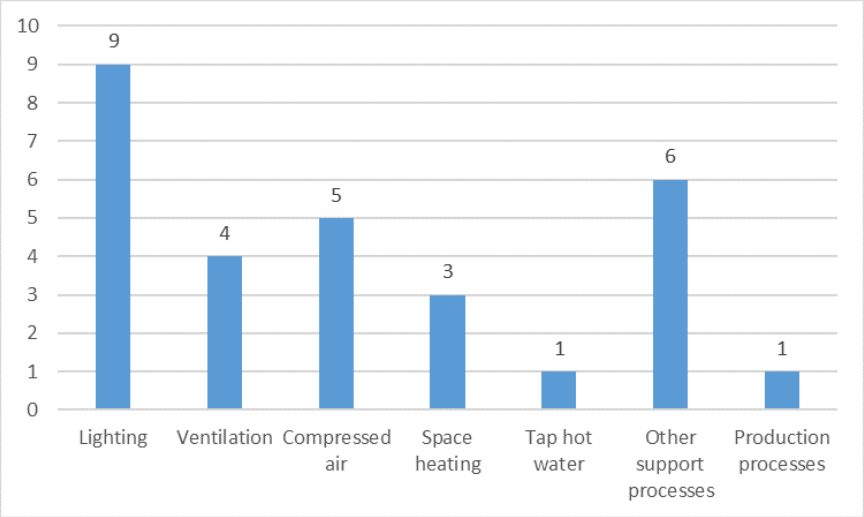

Figure 3. Number of suggested measures from six energy audits, measures divided into unit processes. "Other support processes" include e.g. measures regarding the building envelope.

Evaluation findings

At this intermediate stage of project and IEEN implementation it is possible to compile a few findings in relation to evaluation guidelines/criteria

- **Program logic:** An ENERGIG program logic and a logic for the IEEN implementation was constructed to provide common ground, project overview and structure the evaluation (see Figure 1 and appendix). Targeted outputs of 80 participating SMEs in ten networks have not yet been achieved, which affects several related targets that are at risk of not being met. Clearly, recruitment is a vital but challenging and time-consuming task that requires thoughtful considerations to be effectively executed.
- **Process:** The IEEN implementation has not advanced quite as far as could be expected by the IEEN model. Energy audits have recently been undertaken as the project is more than halfway through. Thus, less time remains for SMEs to interact, implement energy efficiency measures, and verify results based on newly gained knowledge. Renewed funding for a second project will probably be needed to complete the intended three-year network period and reap the potential benefits involved.
- **Public debate.** During project meetings network operators make regular/monthly updates and share experiences and advice between their networks. Reportedly, external communication and coordination is also done with a few similar projects on national level. Being a research and pilot project ENERGIG holds the important task of providing knowledge-transfer to interested stakeholders. In forthcoming workshops, conferences and publications the project partners will have to chisel out the main lessons to be learnt.
- **Key activities.** Among activities involved the paper focused on the recruitment and the energy auditing process, results being presented above. It can be further scrutinized if the output target was overly ambitious, if the recruitment approach was inadequate, which company-internal and project external factors that are influencing output? In order to prevent that recruitment and network formation becomes a bottle neck for project development it is advisable to prepare for and have enough SMEs onboard before launching the actual network

operations including the energy audits.

- **Key persons.** Network operators have been heard about their experiences from recruiting SMEs. They and energy auditors play crucial roles in providing SMEs with positive and relevant injections of information and guidance for energy efficiency improvement. The representatives of SMEs are the main influencers for energy efficient decisions at the firms and the small survey claims participants show willingness to act and contribute to shared objectives. However, it remains to be gathered evidence about change mechanisms involved in succeeding network operations.
- **Key indicators.** Several targeted outputs are at risk due to the lower than aimed for participation (i.e. 44 versus 80 SMEs). However, this in itself should not influence the deemed impacts in terms of energy efficiency improvement, CO_2 emissions reductions, competitiveness and employment that may occur at firm-level. After tangible measures have been implemented, at the end of the project period, the monitoring and verification procedures should demonstrate attributable results.

Concluding Discussion

There are good practice examples where SMEs take part in networks and thereby join forces and cooperate to build energy management capacities. For the first time formalized and applied, on a regional level in Sweden, an Industrial Energy Efficiency Network (IEEN) model currently operates with the aim to attract the participation of at least 80 SMEs in ten local networks. As a joint analysis between the project management and the external evaluator this paper aims to outline characteristics of the particular IEEN model, present intermediate results from implementation and provide further insights from evaluation. To our awareness, program theory (or logic) and ongoing evaluation has so far not been applied to IEENs. The combined approach has helped to clarify the project and contributed to common understanding between evaluator and project organization. It also served to identify critical aspects that calls for attention and to the extent possible modifications. Thus, it can be a powerful evaluation approach applied to IEENs, in particular if introduced in an early stage. Interesting aspects of network management including the intended change mechanisms involved in firm-to-firm knowledge exchange remains to be reviewed as the evaluator plan to attend network meetings.

Based on the findings from the small sample of six energy audit reports there were indications that the number of suggested energy efficiency measures increased if the auditor had access to the database or if the auditor was experienced. This may not be seen as a surprise but underscores the importance for well-developed methods and tools, as well as training (and certification) in relation to energy auditing and energy auditors. However, the energy efficiency potential did not increase accordingly, and company 2, with the lowest number of suggested measures, had the highest energy efficiency potential. This could be explained by their high use of oil for space heating which in the audit was suggested to be converted to a geothermal heat pump. The database also resulted in a more diverse range of suggested measures in the audit, instead of solely focus on investment of new technology, the auditor suggested measures regarding operation times, routines etc. Notably, the use of a database as a tool could be utilized in several ways, one being that the auditor simply outlines measures, derived from the database, without making any further calculations, i.e. outline measures without savings. Another way is that the auditor derived measures from the database, and then discuss these with the company respondent, and which ones that might be relevant for the company, and then make further calculations regarding measures that are of interest for the company. We conclude in this paper that the most efficient means for using a database is to derive measures and then make further calculations, after discussing these with the company respondent. In addition, the database should be considered an important complement when the auditor does not have long experience. These are on-going learnings that could be readily adopted in remaining energy audits, so

to improve auditors' competence and the usefulness of audit reports.

Out of the 156 companies given the offer to participate in IEENs, 44 (or 28%) are currently in a network. Output falls short of target and it should be looked closer at what went wrong in this process. For now, it can be concluded that lack of time and resources was seen as a major barrier for companies to participate in the project, hence the operator should clearly inform the companies what is expected from them in terms of efforts and what they stand to gain. The variation in the number of participating companies from the different municipalities could be due to the fact that the companies were contacted by different operators with different backgrounds and previous experiences from marketing. Only one of the network operators gave information solely via telephone while the others provided additional face-to-face information meetings. An evaluation of recruitment of companies and barriers and drivers to participate in networks seem not to be covered in previous research of IEEN (Carlén et al., 2016; Paramonova, Backlund and Thollander, 2014; Paramonova and Thollander, 2016). A preliminary conclusion from this evaluation is that recruitment ought to be undertaken in a pre-project phase so to ensure a definite start of the actual network operations.

Acknowledgment

The study has been carried out under the project Enhanced energy efficiency for strengthened competitiveness and increased sustainability among Gävleborg's SME through implementation of service and product innovations in industrial energy systems (ENERGIG), financed by the European Commission within the European Regional Development Fund, the Swedish Agency for Economic and Regional Growth, Region Gävleborg, as well as the University of Gävle. We kindly thank the funding bodies for their financial support.

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Program/project logic of ENERGIG

Pre-conditions	Resources	Key activities	Goals	Targeted outputs	Deemed impacts: short and long term
Starting point Energy efficiency (EE) is key in the transition towards climate-neutral and sustainable energy systems. There is untapped but cost-effective potential for EE in Swedish industry. Multiple barriers implies that energy management practices are under-developed in SMEs. Improved firm-internal energy management supported by energy audits and EE networks can double the implementation of profitable EE measures. Research on industrial energy management practices emphasize the importance of: • Long-term energy strategies • Tangible EE targets • Person(s) in charge with full support from top management. *Vision & project goal* Improved EE, sustainability and competitiveness among SMEs; through research-based change mechanisms, such as launching innovative products and service.	*Financial* €600,000 from the European Regional Development Fund, regional partners and co-financiers. *Project organisation* The University of Gävle is project owner and manager. *Project target group* Regional SMEs, from manufacturing and service sectors. *Regional partners* Chamber of Commerce of Central Sweden, Clean Production Centre (active?), the regional energy agency "Gävle-Dala Energikontor" (currently "Ekocenter"?). These partners are supposed to mediate contacts and knowledge on EE and innovation. *Other interactions* Municipal business offices, energy and climate advisers, regional business incubator Movexum, Dalarna University, Linköping University and Uppsala University (the latter involved in the project's equality objectives).	*Approach and activities* Project involves three main business-oriented and research-based change mechanisms: 1. Introduces the service innovation of a network model for energy management and energy efficiency in SMEs. 2. Tests new software that gives participating SMEs access to free and systematic energy audits. 3. Establish a large database of EE measures, compiled by results from prior programs/projects for EE in Swedish industry. In summary, regional SMEs are offered support through participation in EE networks that involves: energy audits; energy and investment planning; implementation and monitoring of EE measures.	*Goal 1* Launch innovative services and products for EE improvement in SMEs.	• ≥10 EEN for SMEs established, • ≥80 energy audits are carried out, with energy audit software and database of EE measures • Establish database of regional energy use and EE measures • ≥80 participating SMEs • ≥150 participating individuals, ≥50 women/men • ≥150 SMEs supported in carrying out energy audit • ≥150 SMEs receives energy audit training	*Impacts short term* Project contributes to increased: • competitiveness, • employment, • EE improvement and • environmental sustainability for regional SMEs. Definition: as a means for competitiveness decreased energy cost improves financial result. Deemed impacts for participating SMEs are: • 30 % reduction in energy use, • 20 % reduction in electricity use, • 50 % reduction in CO_2 emissions, • 50 % reduction in fossil fuel use in relation to base year. *Impacts long term* Project contributes to: • social sustainability through increased employment, • regional job openings within IT and energy technology, innovative EE service development etc. • expanding market potential for introduced innovations, beyond regional area to national and international markets. In the long run, the project improves opportunities for regional SMEs to expand their product and service portfolio and to reach new markets.
			Goal 2 Increased sustainability, EE and competitiveness in SMEs through research-based change mechanisms in energy systems.	• for ≥80 SMEs, identify technical EE measures • for ≥80 SMEs, identify EE measures within energy management • for ≥80 SMEs, implement energy strategy • for ≥80 SMEs, define and follow up concrete energy targets • for ≥80 SMEs, implement and review an energy plan • ≥80 site-visits per year by network coordinators • ≥120 network meetings for SMEs over the project period • ≥150 technical EE measures implemented • ≥150 EE measures within energy management implemented • disseminate project results to ≥500 SMEs in the region • disseminate project results to ≥1000 SMEs nationally	
			Goal 3 Develop academic knowledge, services and methods for: publication in highly ranked journals; presentation at international conferences and; dissemination to potential entrepreneurs, energy directors and employees via university education.	• ≥2 larger seminars/workshops arranged to disseminate project information in the region • dissemination of information to SMEs • competence building – in energy auditing, EE measures, energy management, EE networks – for regional SMEs • ≥5 scientific articles published in journals and conferences • ≥2 popular science articles published • ≥1 project presentation at national conference Energiutblick • ≥1 Ph.D. over the project period	

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Version 2017-05-30