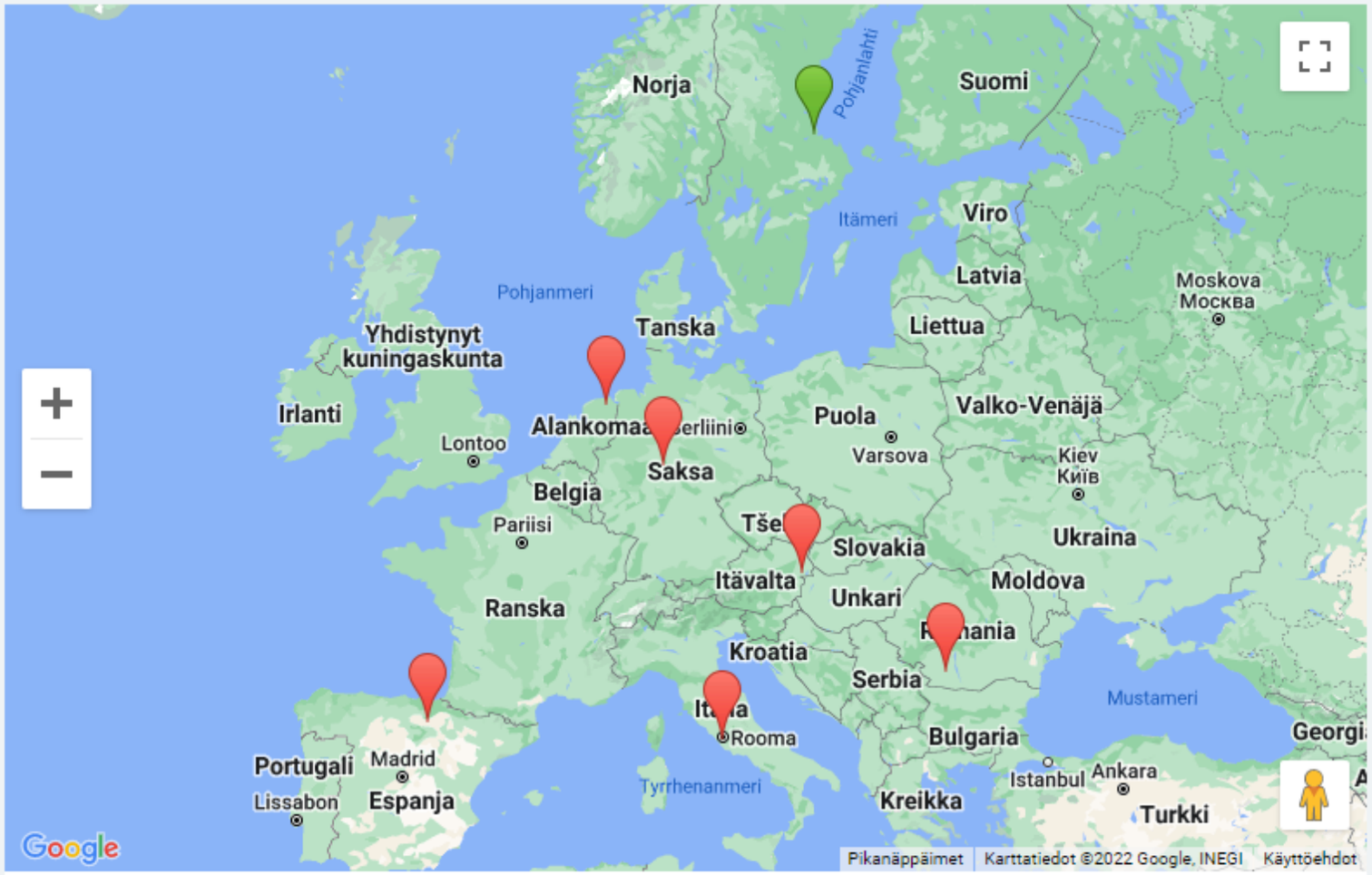
€1,171,830.00

from **1 Aug 2019**
to **31 Jul 2022**

**TOPIC**
Low-carbon economy

## Partnership




Lead Partner  Partner

SMEPlus
Interreg Europe

European Union
European Regional
Development Fund

# Non-energy benefits in energy audit and energy efficiency network policy programs for industrial SMEs

**Ida Johansson**
University of Gävle

18 May 2022

# Aim of study

**Identify and compare NEBs from two key energy efficiency policies in Sweden**

- Energy audit
- Energy efficiency network

**Interviews with company representatives from the programs**

# Swedish Energy Audit Program (SEAP)

**Provided financial support for energy audits in SMEs between 2010 and 2014**

**A one-time-only support for companies covering half of the price for an energy audit**

**The audit had to cover**

- An overview of annual energy end-use
- Price for each energy carrier
- Suggested measures

**No requirements on auditor certification**

# Energy efficiency network ENERGIG

**Regional research pilot project, lasted from 2015 to 2018**
**Targetting industrial SMEs in Gävleborg, Sweden**
**Addition to energy audit to help and support companies**

**The project included:**

- regular meetings at the company sites
- lectures given by energy experts
- a free energy audit by an experienced auditor
- access to a database covering energy efficiency measures from previous industrial energy programs

# Results: Production

**Most commonly mentioned NEB: increased lifetime of equpiment**

- Often mentioned as a result of new installation of LED lights

**More reliable production due to improved knowledge from energy audits and network participation**

**Network participant percieved NEBs also related to measures related to energy management practices, i.e. not only technical installations**

# Results: Operation and maintenance

**Network participants mentioned NEBs in this category more frequent than respondents from SEAP did**

**Reduced maintenance costs most commonly mentioned**

**Lectures in the network project and knowledge obtained from those were mentioned as reasons to reduced maintenance**

# Results: Working environment

**Both groups mentioned NEBs related to working environment**

**Mainly due to improved quality of light after LED installations**

# Results: Waste and emissions

**Only a few NEBs mentioned related to waste and emissions**

**They do not measure external emissions and can only roughly guess how these were affected**

**Utilization of waste heat and reduced waste from installation of LED lights were mentioned**

# Results: Other

**Major difference between the two groups in this category**

**Improved work ethic and improved company image**

- Mentioned by the respondents from EEN, while not from respondents from SEAP

**EEN companies also mentioned new contacts**

- Professional contacts and less formal contacts

# Conclusions

**Participants from the energy audit program related NEBs mainly to technical installations, while network participants also saw these types of NEBs from energy management practices**

**Established contacts with other companies is an important NEB from network participation**

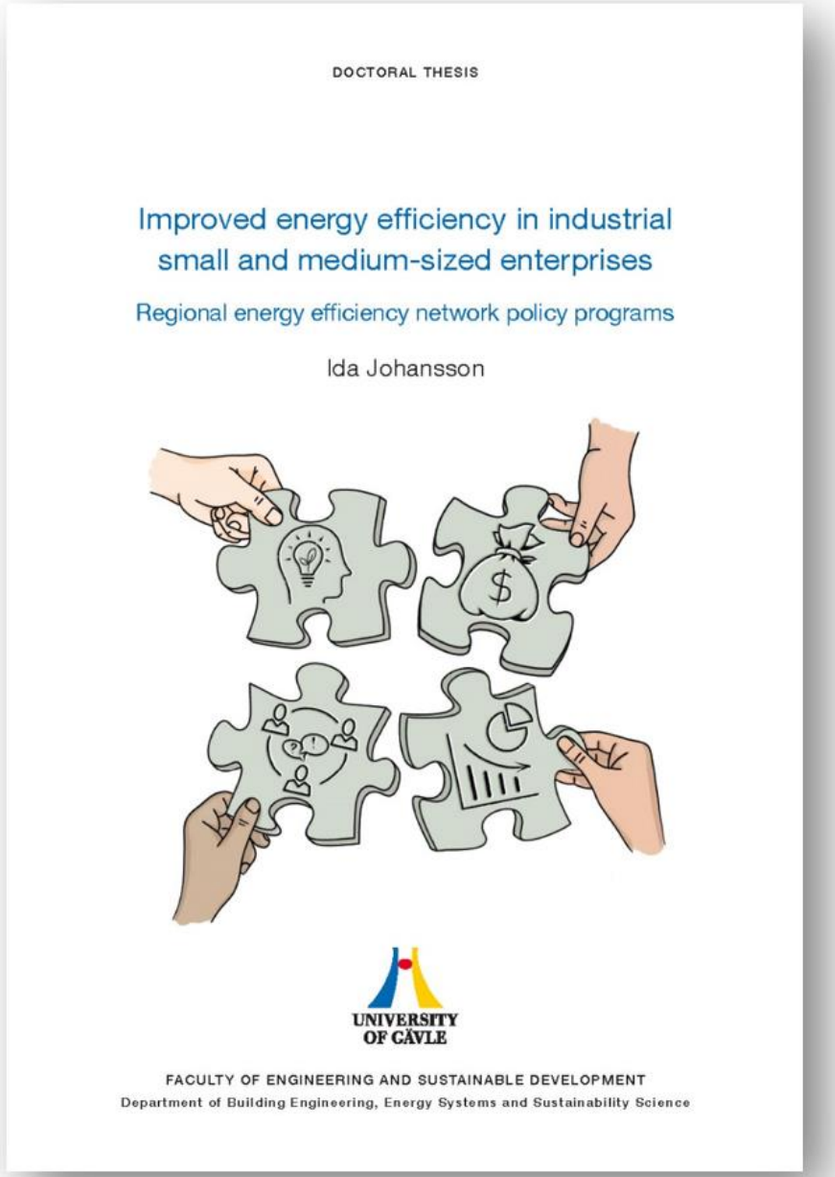
# Conclusions

**EENs deliver a higher degree of improved energy efficiency and knowledge about energy management practices, compared to energy audits alone**

**As a company evolves into higher maturity levels of energy management practices, NEBs increases in importance**

Key findings from my thesis:

- EENs results in higher achieved energy efficiency compared to energy audits, but costs more to operate
- EENs reduce some of the common barriers to energy efficiency, mainly barriers related to information and knowledge
- EENs primarily targets energy efficiency potential in support processes
- The main barriers to energy management in SMEs seems to be related to organizational aspects
- Results in a model for design of energy programs and a model for evaluation




Johansson, I. (2022). Improved energy efficiency in industrial small and medium-sized enterprises: Regional energy efficiency network policy programs. *PhD thesis, University of Gävle.* https://www.diva-portal.org/smash/get/diva2:1626501/FULLTEXT01.pdf

SMEPlus

Interreg Europe

European Union
European Regional
Development Fund

# HESSE – Good Practice Presentation

**Christian Engers**

House of Energy

# Good Practice

## PIUS-Programme

→ PIUS stands for production-integrated environmental protection (“Produktionsintegrierter Umweltschutz”)

→ support system comprising of
- the advisory scheme **PIUS-Beratung (advisory service)**
- the funding scheme **PIUS-Invest**

→ both schemes are interlinked, but can be applied separately

→ help SMEs save resources:
savings of energy, water, raw-materials or auxiliary materials leads to financial savings and environmental protection

# Good Practice

## PIUS-Beratung (advisory service)

- Goal: identify savings in the area of production, service and trade. Savings in material use and energy consumption lead to reductions in $CO_2$-emissions

- advisors help the SME to identify the possible savings and develop solutions on how to optimise processes in the energy cycle and in the cycle of materials.

- possible grant: up to 50% of the advisory service,
  maximum of 600 Euros per advisor day,
  maximum of 12,000 Euros over a period of 3 years

# Good Practice

## PIUS-Invest

- funding applies to process and organizational innovations (e.g. efficiency increases in production and business processes, or investments in environmentally friendly plant engineering)

- Required are direct actions that lead to a reduction in material and energy consumption and consequently to a reduction in $CO_2$ emissions

- grant: up to 30% with a maximum of 500,000 Euros
  1 Euro for every kilogram of $CO_2$ saved
  (e.g. saving 500,000 kg of $CO_2$ emissions might lead to the maximum support grant)

# Good Practice

PIUS – Info-Trailer:
https://www.youtube.com/watch?v=btKnMrHEDr0
(in German)

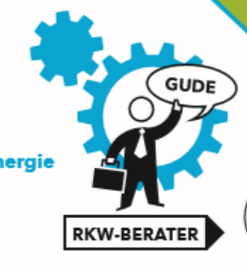
## PIUS-Programme – Overview

**WO** KANN ICH MICH BERATEN LASSEN ?

### ERSTBERATUNG

**Sie möchten Kosten, Material UND Energie sparen? Kostenfreie Impulsberatung** bei Ihnen **vor Ort** (2 Stunden):

- **Einsparpotenziale** um **10 bis 50 %** in fast jedem Betrieb
- Ermittlung **ungenutzter Potenziale**
- Potenziale **technisch & wirtschaftlich** erschließen
- Hinweise zu **Sofortmaßnahmen**
- Beratung zu energieeffizienten Technologien
- Darstellung konkreter **Förder- und Investitionsmöglichkeiten**





**POTENZIALE ZUR $CO_2$-SENKUNG ERKENNEN**

### PIUS-BERATUNG

**Sie haben Potenziale zur PIUS-Invest-Förderung ermittelt?** Die **unabhängige PIUS-Beratung** für **hessische Unternehmen** hilft Ihnen weiter:

- Umfassende **Analyse** aller betrieblichen Abläufe
- **Antragsstellung** zur **PIUS-Invest-Förderung**
- **Zertifizierung** als Basis für weitere Förderungen
- Beratung wird bezuschusst

IHR ANSPRECHPARTNER:
**RKW Hessen GmbH** (s. Rückseite)

**Gut zu wissen:**
Eine PIUS-Beratung kann mit **maximal 650 Euro pro Tag** gefördert werden. Dabei werden **maximal 50 Prozent** des Beraterhonorars erstattet. Die Förderung kann **bis zu 13.000 Euro** innerhalb von 3 Jahren betragen.

**WIE** FUNKTIONIERT DIE PIUS-FÖRDERUNG ?

## PIUS-INVEST

### ZUSCHUSS-FÖRDERUNG

bis zu **30 %** Zuschuss

pro Projekt **max. 500.000** Euro

**WER** WIRD GEFÖRDERT ?

**KLEINE UND MITTLERE UNTERNEHMEN (KMU) MIT SITZ IN HESSEN**

HESSEN

PRODUKTION | HANDEL | DIENSTLEISTUNG

**WAS SIND KMU?**

| weniger als | Jahresumsatz | Jahresbilanz |
|---|---|---|
| **250** Beschäftigte | max. **50 Mio** Euro | max. **43 Mio** Euro |

Infografik: www.caepsele.de

**WAS** WIRD GEFÖRDERT ?

**PROZESS- UND ORGANISATIONS-INNOVATIONEN + $CO_2$ SENKUNG**

Um eine PIUS-Invest-Zuschuss-Förderung zu erhalten, sollte Ihr Projekt durch die Umsetzung einer **PROZESS- ODER ORGANISATIONS-INNOVATION** mindestens eines der folgenden Ziele erreichen:

- Verbesserung der Energie- und Ressourceneffizienz
- Einsparung von Wertstoffen und Etablierung von Wertstoffkreisläufen / Einsatz von innovativen Fertigungstechniken
- Speicherung von Energie / Produktion, Verteilung und Nutzung erneuerbarer Energien / Anpassung an den Klimawandel

**$CO_2$-SENKUNG**

min. **1 kg** pro **Euro** Projektförderung


zertifiziert PIUS-INVEST und hilft bei der **Antragsstellung**

**WIE** WIRD DER ANTRAG GESTELLT ?

Die **Anträge** werden bei der **Wirtschafts- und Infrastrukturbank Hessen (WIBank)** gestellt. Für die Gewährung der Zuschüsse erfolgt eine Prüfung durch einen Gutachter hinsichtlich des Innovationsgehalts und der zu erzielenden $CO_2$-Einsparungen.

**WIE** KANN ICH WEITERE FÖRDERUNG ERHALTEN ?

### INNOVATIONSKREDIT HESSEN

Ergänzend zur PIUS-Invest-Förderung können Sie mit einem **PIUS-Invest-Zertifikat** den **Innovationskredit Hessen** nutzen. Durch eine Kombination dieser beiden Angebote ist eine 100 %-Finanzierung möglich. Weitere Informationen finden Sie unter www.wibank.de/innovationskredit

**MEHR ERFAHREN**
**www.PIUS-INVEST.de**

# Good Practice

## **Achievements PIUS-Invest** (31.12.2019)

- **32** approved projects
- Total expenditure of 29.7 M €
  with **7.4 M €** of granted subsidies
- Expected $CO_2$-savings: **98.300 tons p. a.**

# Good Practice

**Case Study:** K-ZWO
(upholstery for yachts, cruisers and caravans)

| **CO2-Reduction** | **836 tons** |
|---|---|
| Reduction of foam waste | 508 tons |
| Reduction of polyester fabric waste | 228 tons |
| Reduction of energy consumption | 100 tons |
| **Total investment** | **1.095.668 €** |
| PIUS grant | 328.700 € |
| Innovation Loan Hessen | 766.968 € |

→ grant of **328,700 Euros** for investments in machinery and building equipment
preceded by PIUS-Beratung advisory-service

## Kontakt:

**House of Energy e.V.**
Universitätsplatz 12
34127 Kassel, Deutschland
www.house-of-energy.org

SMEPlus
https://www.interregeurope.eu/smeplus/
#SMEPlus

Christian Engers: *c.engers@house-of-energy.org*

Gefördert durch:

SMEPlus

Interreg Europe

European Union
European Regional
Development Fund

# Thank you!

**Questions?**