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# Energy Efficiency Networks in Industry

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# THE EU PROJECT ODYSSEE-MURE



# ODYSSEE - MURE

- The webinar is organized within the framework of the ODYSSEE-MURE project
- A summary of the contents is published in a policy brief at <http://www.odyssee-mure.eu/publications/policy-brief/>
- The project is supported by the Horizon 2020 programme of the European Commission and coordinated by ADEME
- The present project covers 31 countries (all EU MS, Norway, Serbia and Switzerland)
- The heart of the project are two databases:
  - ODYSSEE**: energy efficiency and CO<sub>2</sub> indicators (about 180 indicators) based on energy consumption data by sector and end-use and their drivers (about 600 main data series) → managed by Enerdata
  - MURE**: structured description of past, present and planned energy efficiency policies in the EU and all partner countries → managed by Fraunhofer ISI and ISINNOVA

All information available on the website: [www.odyssee-mure.eu](http://www.odyssee-mure.eu)

# THE CONCEPT OF ENERGY EFFICIENCY NETWORKS (EEN)

# The link between energy efficiency (EE) potentials, barriers and policies

## Cost-effective EE Potentials in industry

- Economic Potential: cost-effective from a social perspective
  - Profitable Potential: cost-effective from an individual perspective
- Technologies behind these cost-effective potentials:  
fans, pump systems, cooling devices, compressed air systems, system optimisation, CHP

## Barriers to EE in industry

- Information and knowledge gaps on EE potentials and financial support
- Fear of negative impact on product quality
- Uncertain economic and legal framework conditions
- Lack of capital
- Low priority / High transaction costs for EE investment

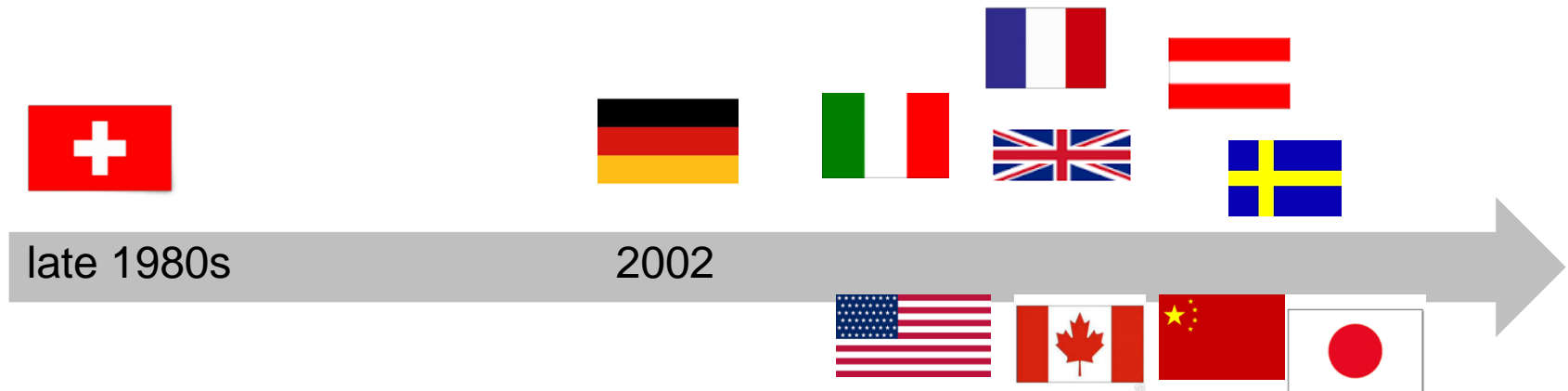
## EE Policies for industry

- Co-operative measures
- Financial
- Fiscal/Tariffs
- Information/Education/Training
- Legislative measures
- New market-based instruments

All main EE policies for industry in the EU, all MS and CH, NO, RS are described in **MURE**

## Energy Efficiency Networks (EENs)

# International spread of the concept of EENs



## Characteristics of Energy Efficiency Networks (EENs)

- Uniform goal: increase energy efficiency in a company
- Some common characteristics:
  - ✓ Exchange of energy efficiency experiences in moderated meetings
  - ✓ Consultations with energy efficiency experts
- But: different forms with regard to institutional structure, geographical scope, number/size of companies and services offered

# HOW ENERGY EFFICIENCY NETWORKS ADDRESS BARRIERS TO ENERGY EFFICIENCY



## Barriers to EE in companies

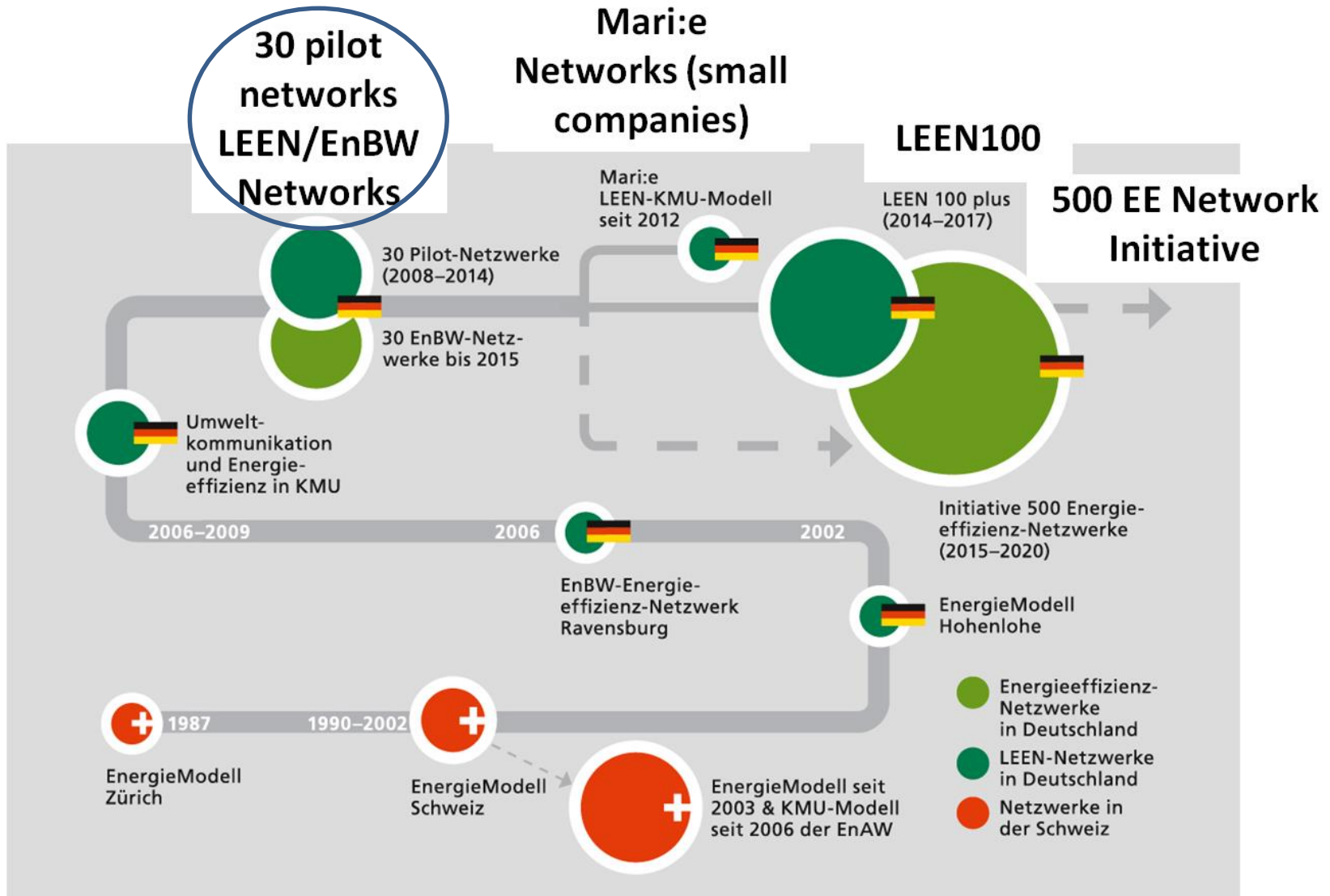


## How EENs remove barriers

- Information and knowledge gaps on EE potentials and financial support
- Fear of negative impact on product quality
- Uncertain economic and legal framework conditions
- Lack of capital
- Low priority of EE investment
- High transaction costs for EE investment
- Raising awareness of cost-effective saving potentials
- Regular meetings → capacity building in companies
- Increasing transparency about energy use → implementation of energy management systems or other monitoring tools
- Providing information about private and public financing of energy efficiency investments
- Making energy efficiency a higher investment priority

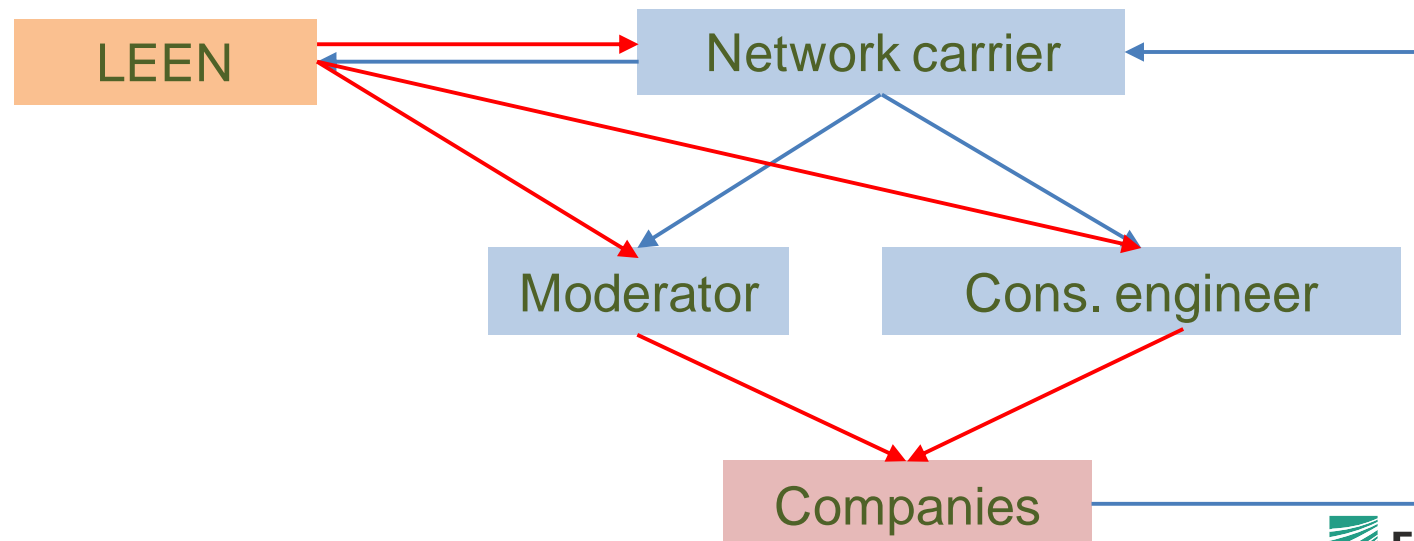
# **CASE STUDY FOR GERMANY: LEARNING NETWORKS FOR ENERGY EFFICIENCY (LEEN)**

# History of EENs in Germany

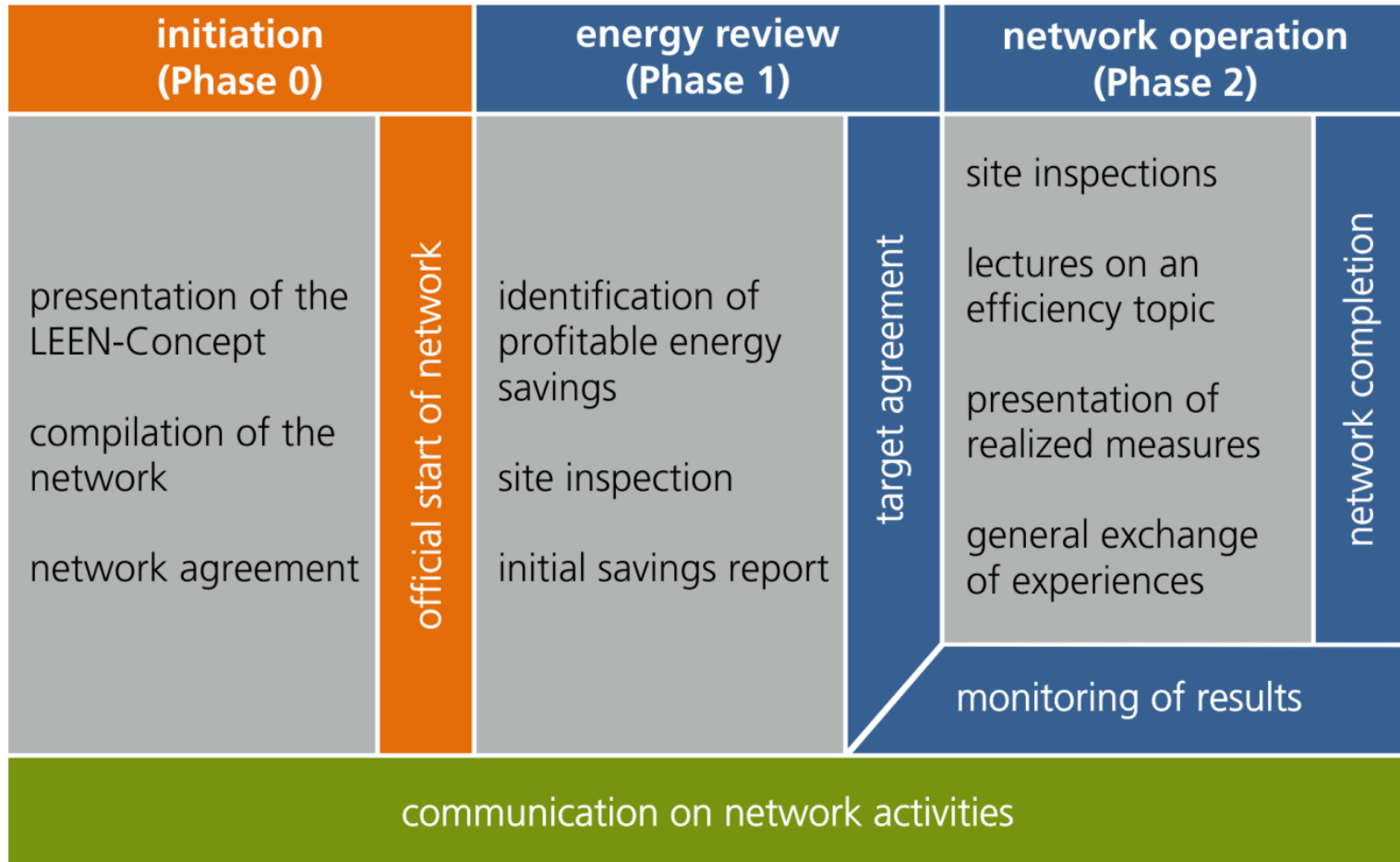


# Learning Energy Efficiency Networks – The LEEN Principles

- 10-15 participating companies:
  - ✓ Energy cost > 500.000 €/a
  - ✓ Willingness for an active exchange of information in regular meetings and to save energy
  - ✓ Support by the Company Management
- LEEN standard obligatory (compliant to ISO 50001)



# LEEN – The concept



# Scope of the LEEN Pilot Project

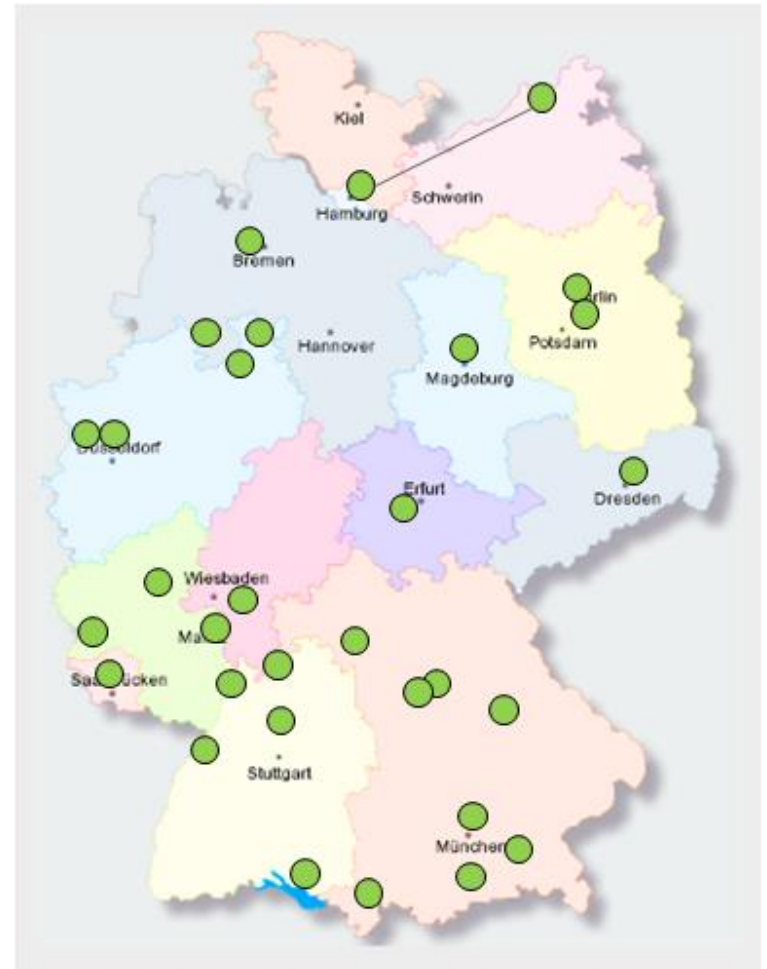
## 30 Networks in Germany

- Energy costs of ~1 bn. €/a
- Energy consumption >15 TWh/a
- CO<sub>2</sub>-emissions > 5 Mio. t/a

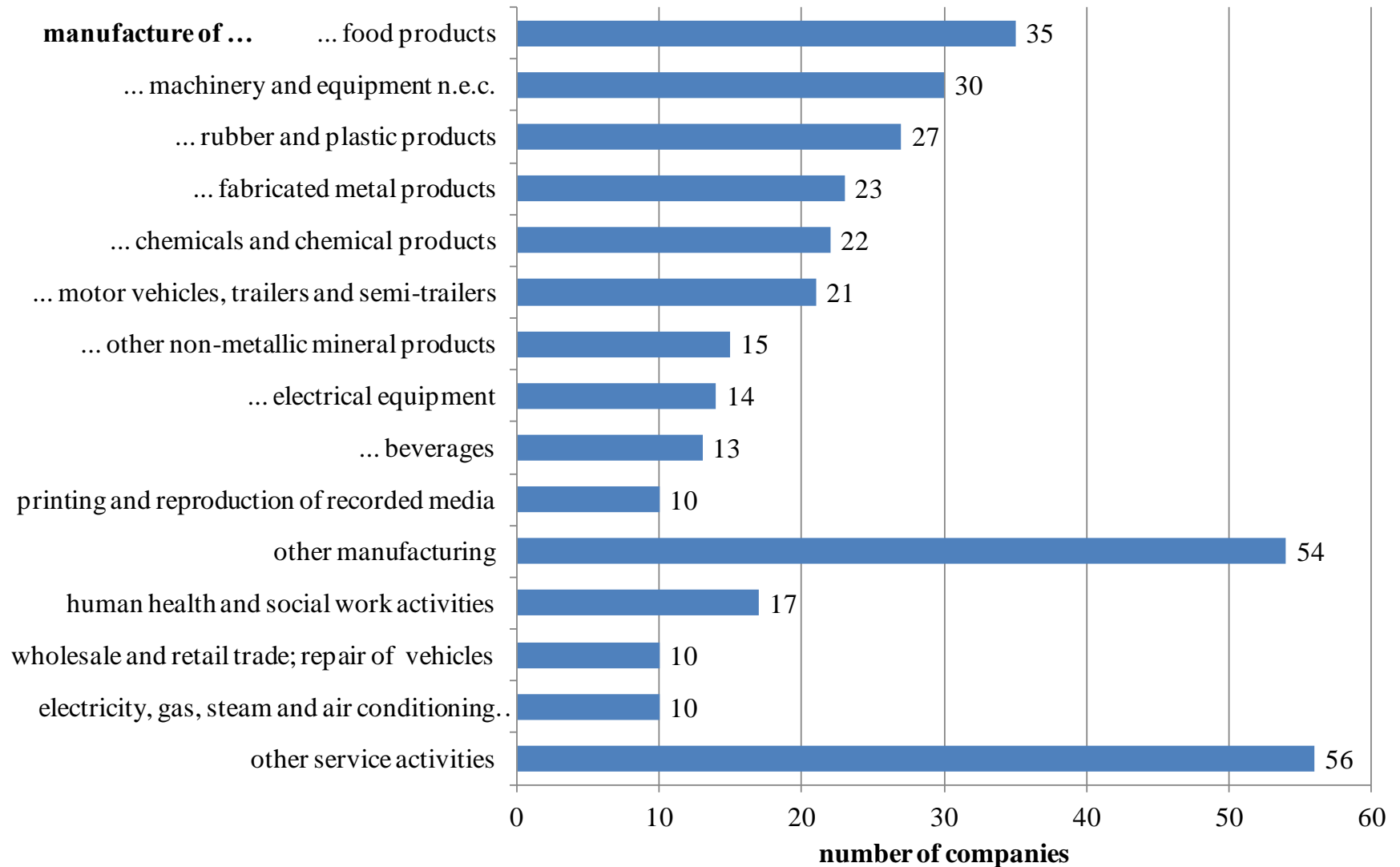
## Sectoral Coverage

- 74% Industry,
- 5% Health, 3% Utilities, 3% Trade

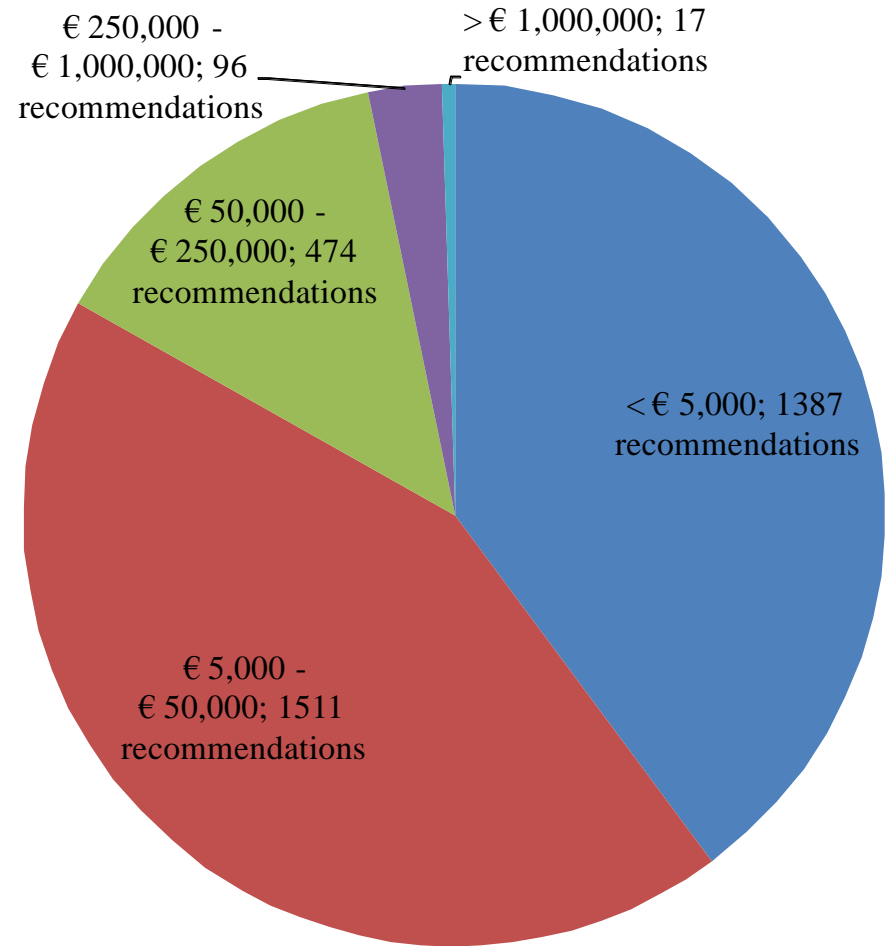
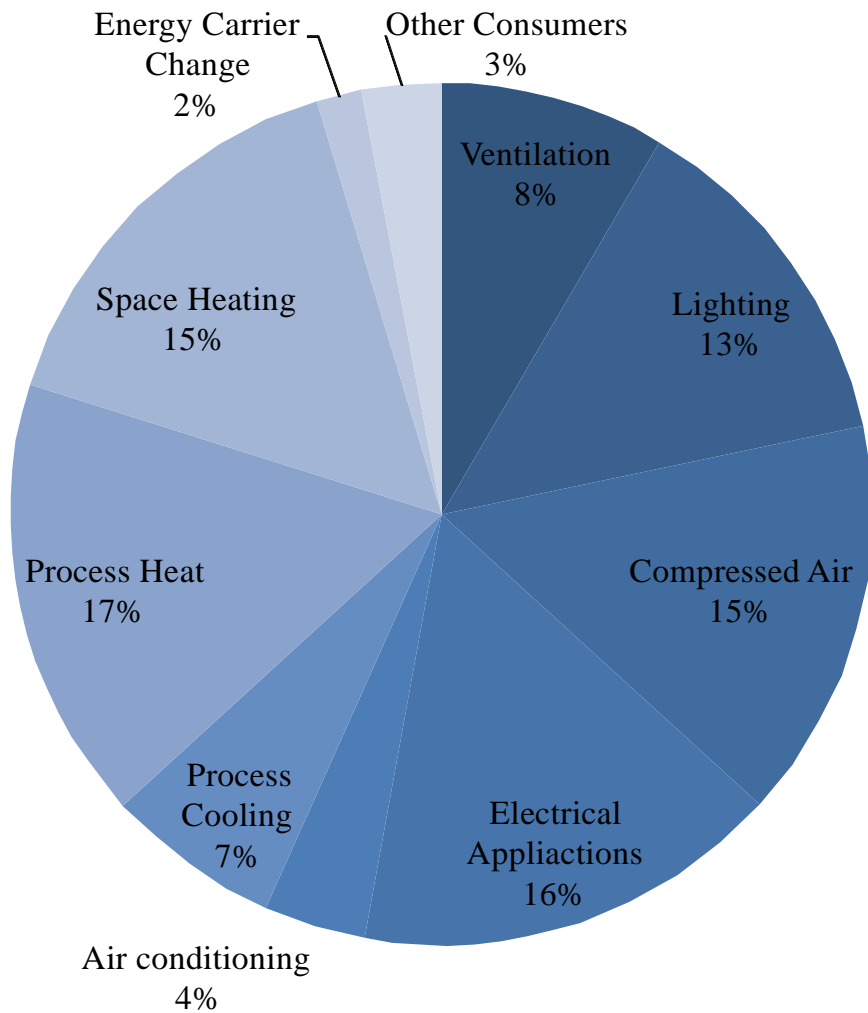
54% of the network companies  
have energy costs  
between 500.000 und 4 Mio. € p.a.



# Sectoral coverage of the LEEN Pilot Project



# Energy efficiency measures implemented in the LEEN Pilot Project

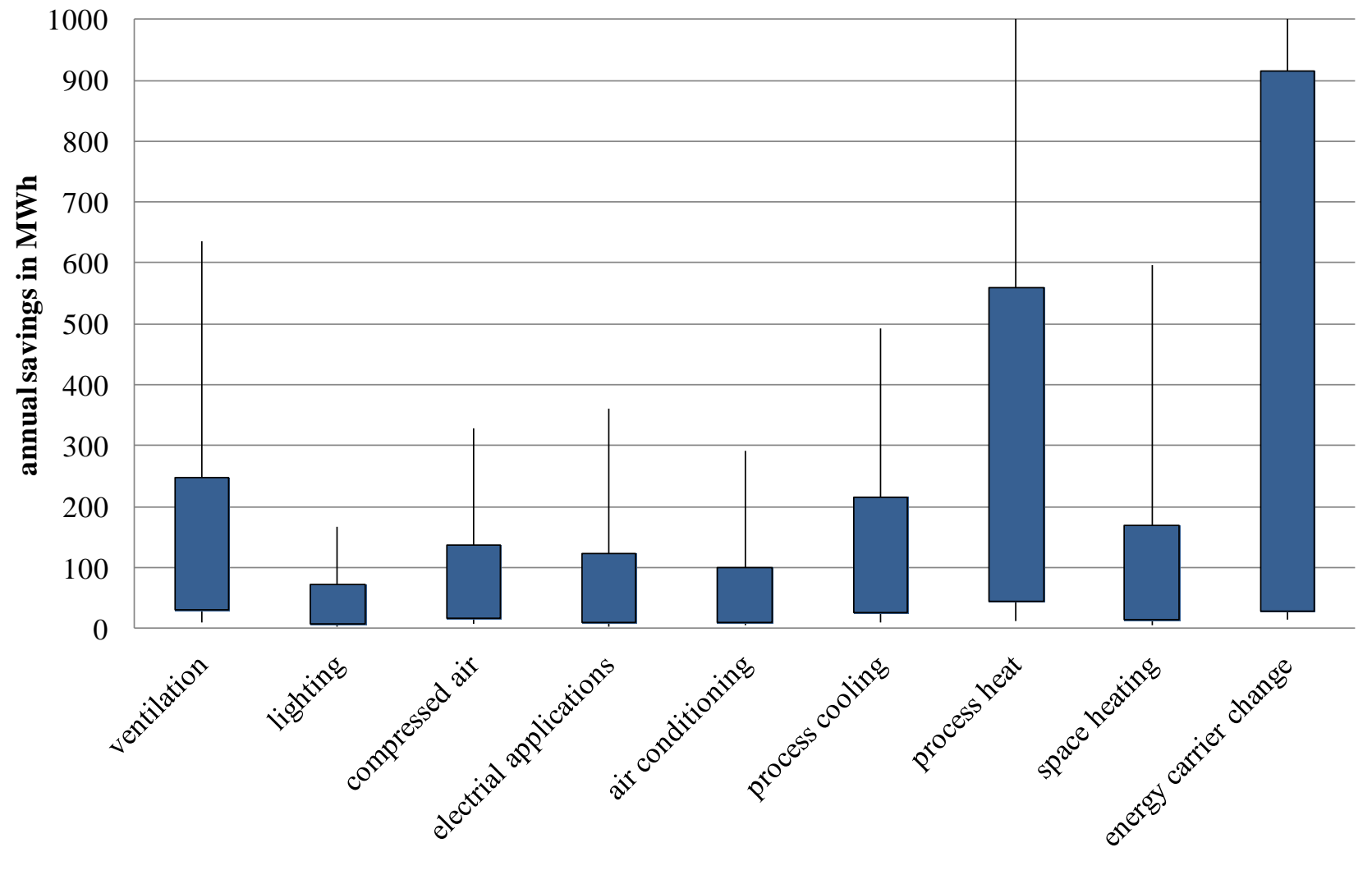




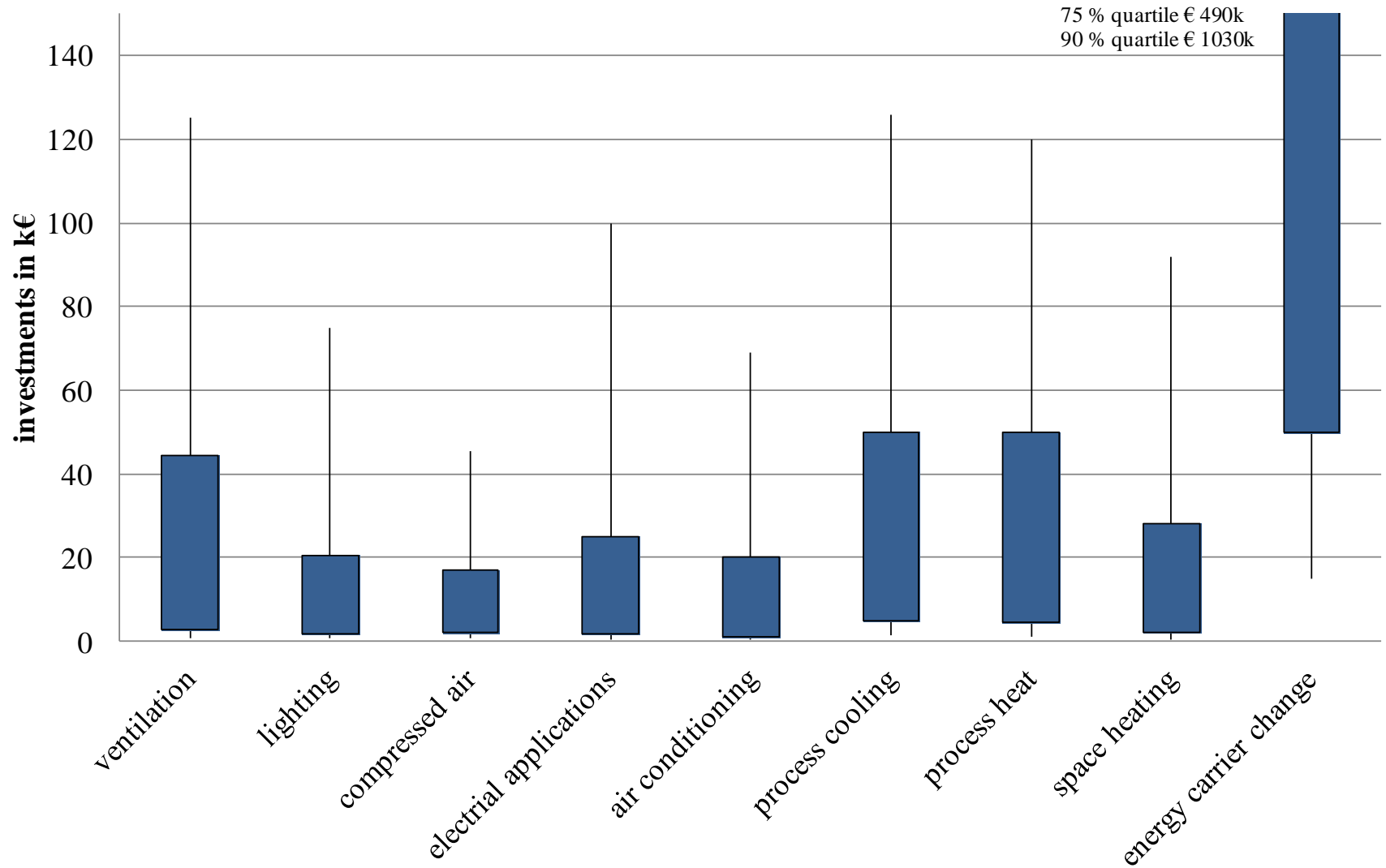
# Example: Cost saving potentials found in network companies

Type of auxiliary equipment		EE potential	Internal rate of return
11 MW	Air compressor station	30 %	20 %
25 MW	Heat and steam generation	35 %	25 %
4 MW	Waste heat recovery to preheat glass raw materials and cullets	40 %	18 %
90 kW	Water circulation pumps	25-35 %	20 %
75 kW	Lighting of a storage hall and a production hall	20-30 %	15 %
100 kW	Air compressor station (Valves und regulation by the staff)	25 %	20 %
1 MW	Waste heat use of plastics production machines	40 %	18 %

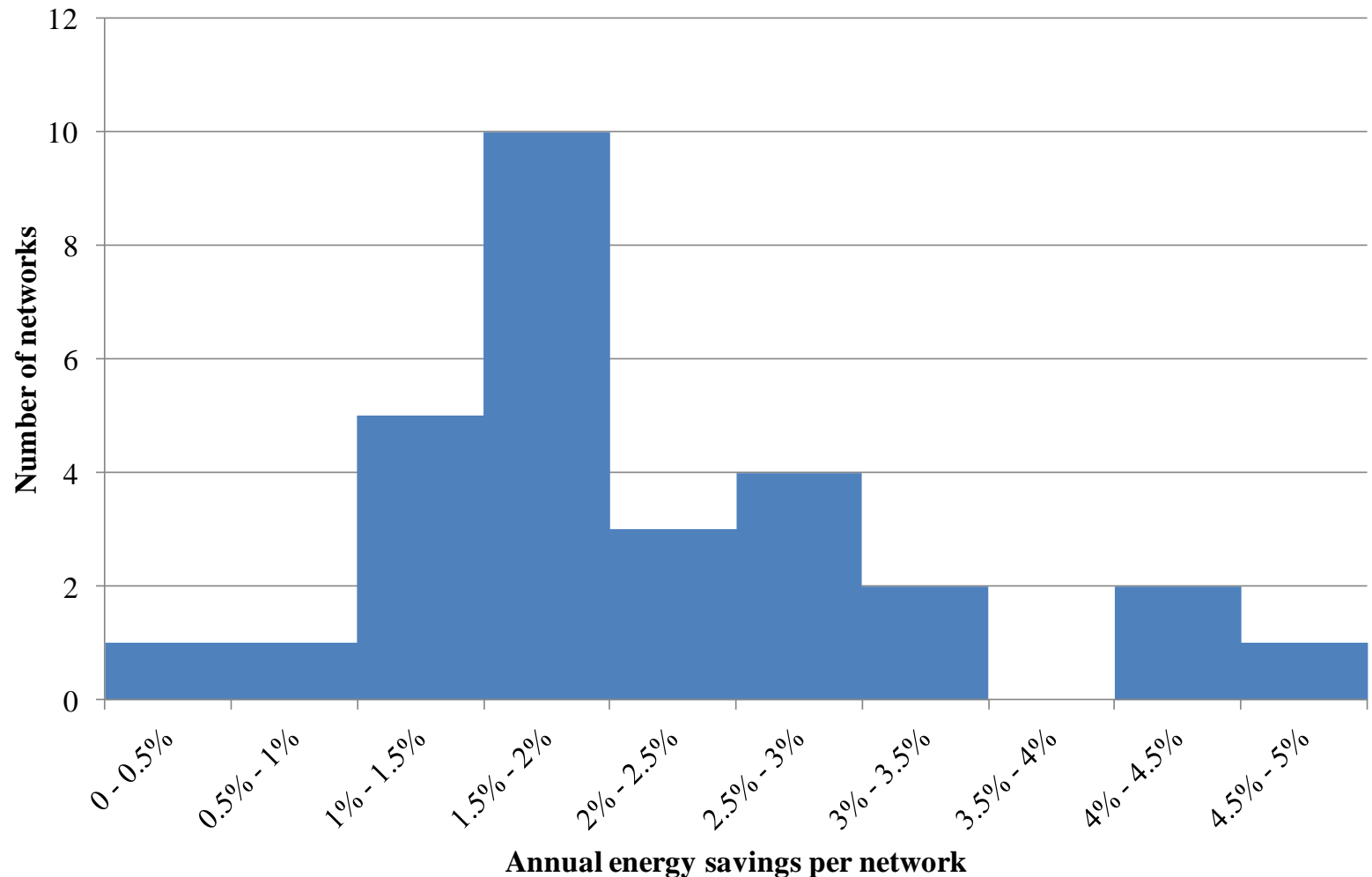
# Savings achieved in the LEEN Pilot Project



# Range of investments in the LEEN Pilot Project

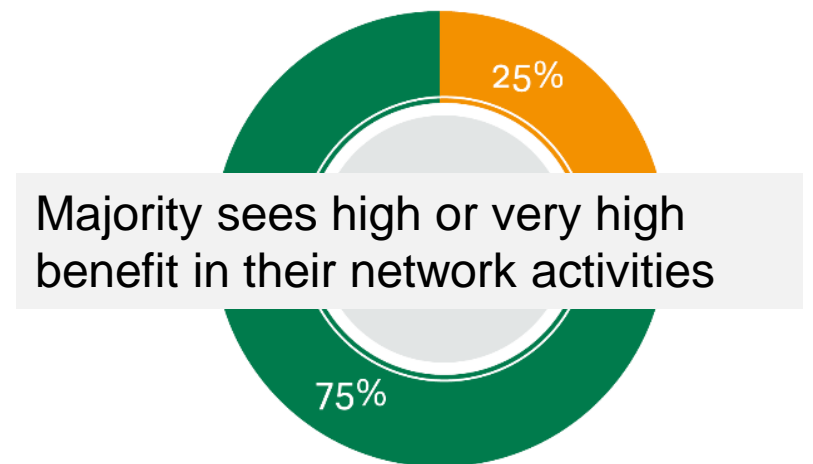
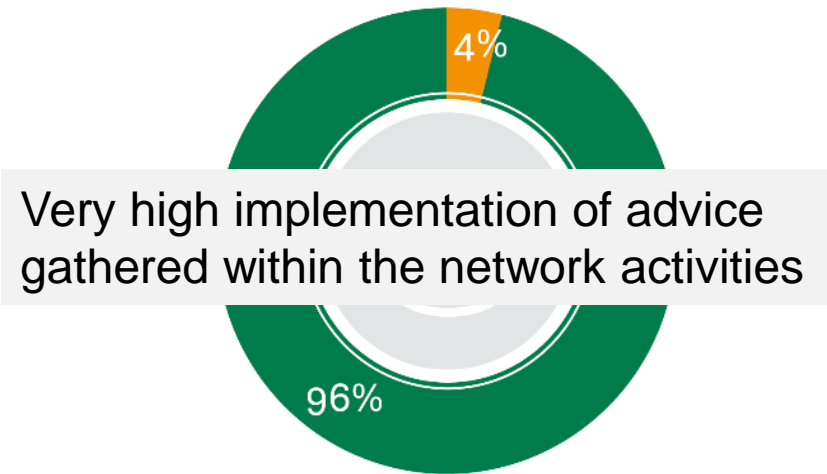


# The LEEN Pilot Project: Annual energy savings per network



# Overall success of the LEEN Pilot Project: Facts and Figures

- 180.000 Euro reduction in energy cost per company
- CO2-reduction: 2.4 % per year
- EE increase: 2.1 % per year
- 10 new economic EE measures per company
- 30 % internal rate of return of the implemented EE measures



# Other types of EENs in Germany

- **500 Energy Efficiency Networks Initiative** of the German government shows a greater spread in the size of the participating companies and in the number of companies in a network compared to the LEEN networks.
- **Mari:e**: Networks for small and medium-sized companies with energy costs between €30,000 and €500,000 per year with a less demanding energy management system.
- **Branch-specific networks** in industries or company groups that do not compete in terms of energy costs (e.g. hotels and restaurants).
- **Corporation-internal networks** where several production sites of one corporation work together in one network.
- **Municipal Energy Efficiency Networks** for cities with up to 200,000 inhabitants or networks for the corresponding counties/districts.

# SUCCESS FACTORS OF ENERGY EFFICIENCY NETWORKS

# General success factors for EENs

- **Network structure** that provides all the services required to remove the different economic and non-economic barriers.
- Provision of **tools and standardised guidelines** to lower implementation and transaction costs and ensure a high quality of energy savings (e.g. the LEEN standard).
- Specification of a **clear time frame** for the network.
- Providing **training** for those operating the network (managers, moderators, consultants) and for the staff in the participating companies.
- Developing a sustainable **business model** for EENs that reduces dependency on government support.



# CONCLUSIONS AND OUTLOOK

# Conclusions and Outlook

- The concept of EENs was successful in improving energy efficiency in companies → new network initiatives can build on the success factors derived from previous EENs
- The concept convinced the German government to establish 500 new EENs and many other countries inside and outside Europe to rely on this EE instrument
- EENs not only contribute to reducing energy consumption and energy costs, but also to other benefits of energy efficiency, e.g.:
  - ✓ climate protection
  - ✓ the development of a market for energy services
  - ✓ reducing the burden on the energy infrastructure and the dependence on energy imports
- Worldwide dissemination of the concept of EENs including some basic requirements to ensure the success of the instrument is a conceivable and desirable goal for the near future

# More information

For more information on the products of the ODYSSEE-MURE project see <http://www.odyssee-mure.eu/>

For more information on the LEEN networks in Germany see

<http://leen.de/en/>

<https://www.energie-effizienz-netzwerke.de/> (only in German)

For more details on Energy Efficiency Networks in other countries see International Partnership for Energy Efficiency Cooperation (IPEEC), Energy Efficiency Networks – An effective policy to stimulate energy efficiency, OECD/IPEEC , 2016.

[https://ipeec.org/upload/publication\\_related\\_language/pdf/155.pdf](https://ipeec.org/upload/publication_related_language/pdf/155.pdf)

More references are also given in the policy brief accompanying this webinar:

<http://www.odyssee-mure.eu/publications/policy-brief/networks-energy-efficiency.html>

# Thank you for your attention

## Questions?

**ODYSSEE-MURE website:** [www.odyssee-mure.eu](http://www.odyssee-mure.eu)

- ODYSSEE and MURE database
- ODYSSEE and MURE facilities
- Several publications on energy efficiency trends and policies:
  - Policy briefs
  - Sectoral profiles
  - Brochures on indicator and policy analysis
  - Country profiles
  - National reports by country

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