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# ENERGY EFFICIENCY NETWORKS: LATEST DEVELOPMENTS IN GERMANY AND IN THE WORLD

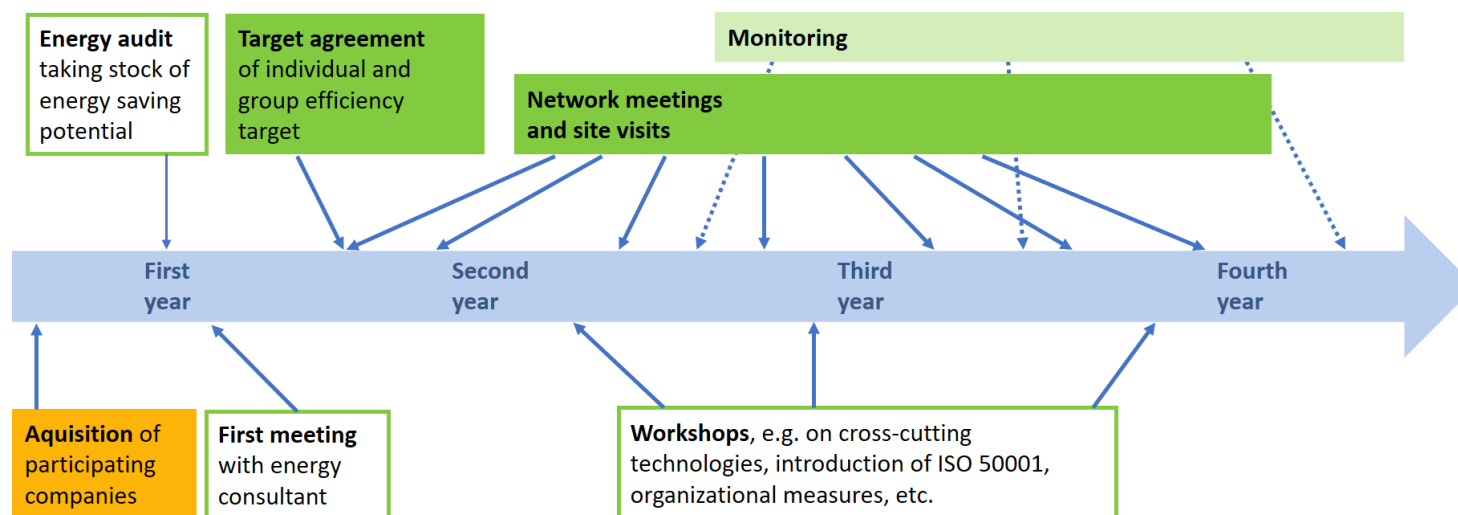
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## Background: Energy Efficiency Networks

- **Energy Efficiency Network (EEN):** pool of companies whose energy managers meet regularly to **share experiences on energy savings and to implement solutions**. The **exchange of experience is voluntary but structured**. The companies may come from the same sector

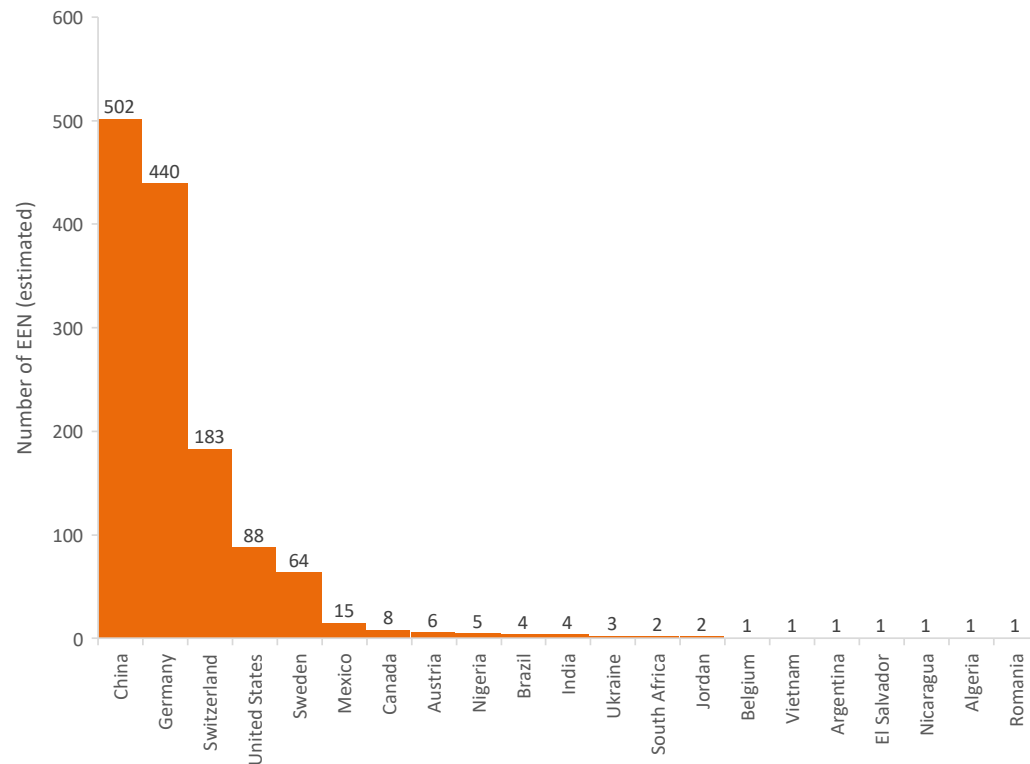


Source: Durand and Damian 2019, based on IPEEC 2017

# International experiences

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## Estimated number of EENs in each country



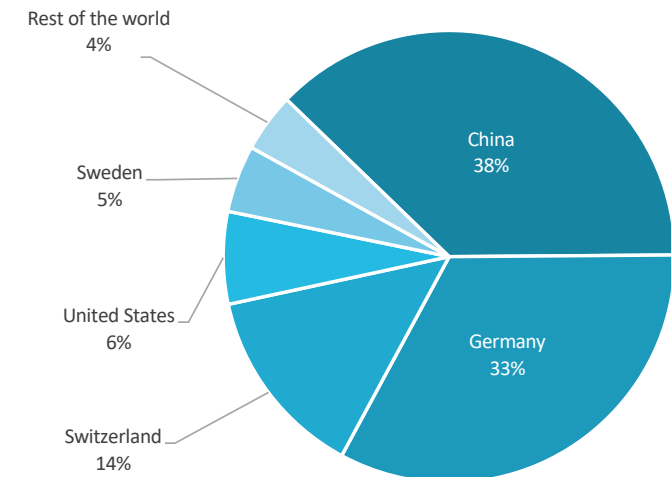
Based on Durand and Damian 2019

## Share of the estimated number of EENs in each country

An estimated number of 1,333 EENs has been implemented worldwide.

3 countries account for 85% of the EENs, different strategies:

- Switzerland: "target agreement" policy and EEN participants exempted from the carbon tax
- Germany: voluntary agreement signed by the Government and 22 industry associations to implement 500 EENs;
- China: the State Grid Corporation of China initiated the implementation of EENs in three economic regions



Based on Durand and Damian 2019

## Recent results from Germany

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# Background: Monitoring of the German EENs

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## Conditions for Networks in the German EEN Initiative

- It was founded after December 3rd, 2014;
- It has a duration between 24 and 36 months (deviations upwards are possible);
- It consists of at least 5 companies located in Germany;
- It is supported by qualified moderators and internal or external energy consultants;
- It has defined a common energy saving target within the first 12 months of operation, and
- **Takes part in the monitoring process.**

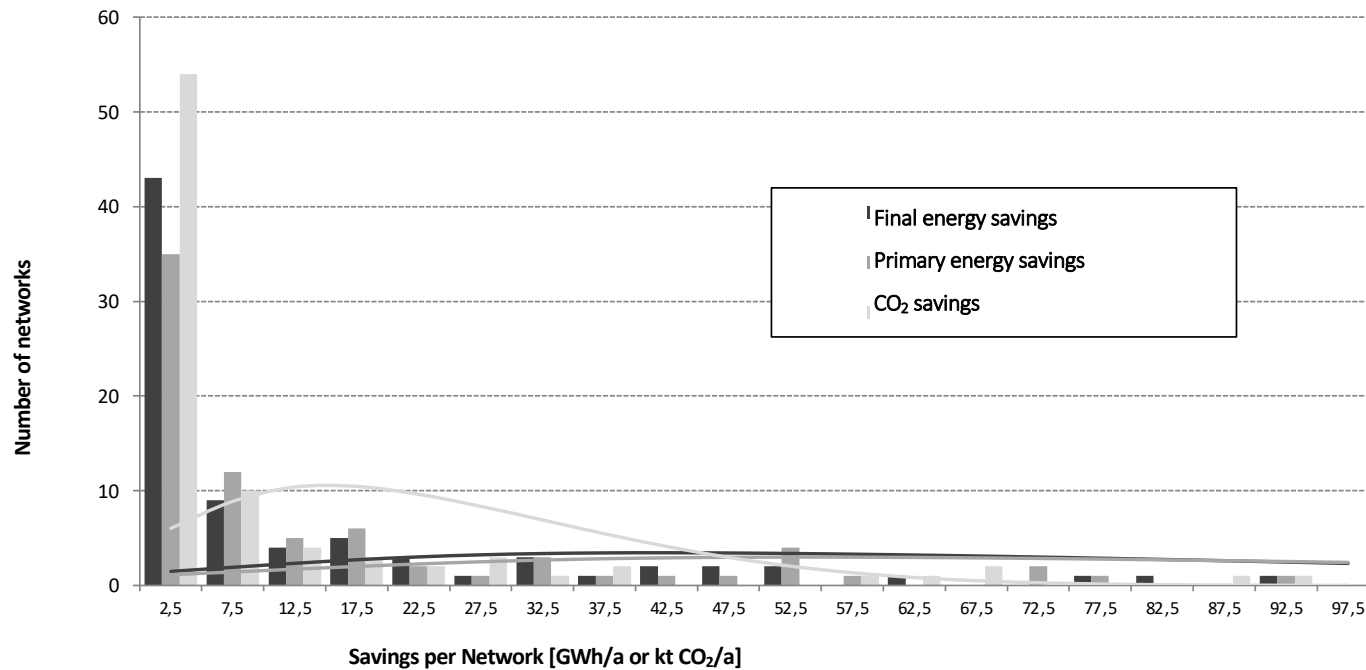
## Reported savings per network

Savings per network [MWh/a or t CO <sub>2</sub> /a]	Total	Mean value	Standard deviation	Fractile values				
n = 87				10%	25%	50%	75%	90%
Final energy saving	2,726,367	31,338	73,665	287	1,141	4,687	25,627	85,356
Primary energy saving	3,481,248	40,014	84,386	441	1,504	7,510	37,550	125,467
GHG savings	1,017,178	11,692	23,158	153	477	2,421	10,668	37,893

Barckhausen 2019



# Distribution of savings at the network level



n=87. Illustrated range: 0 - 100 GWh or kt CO<sub>2</sub>/a. Seven (final energy savings), five (primary energy savings) and one (CO<sub>2</sub> savings) upwardly deviating observations fall outside the diagram area. (Source: Barckhausen 2019)

# Relative target achievement

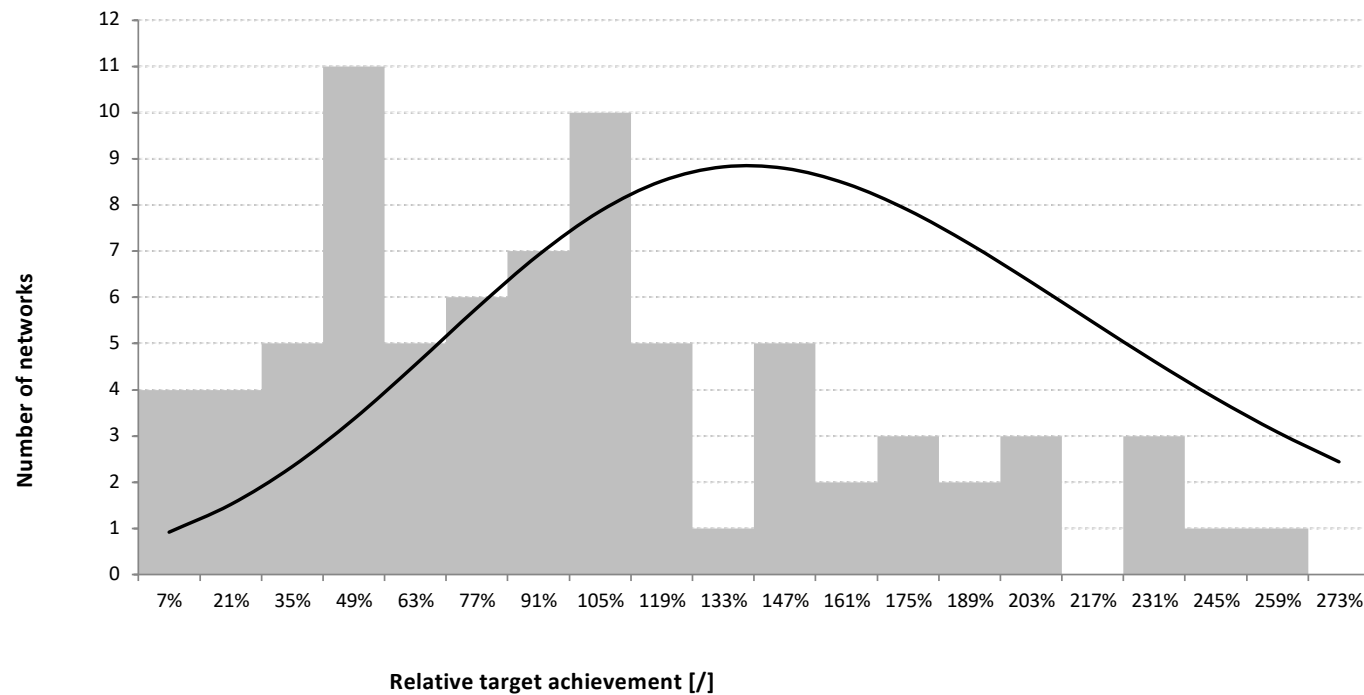
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Per network [MW/a]	Total	Mean value	Standard deviation	Fractile values				
n = 87				10%	25%	50%	75%	90%
Network Target	2,453,166	28,197	61,151	487	1,574	4,720	20,000	100,000
Relative target achievement	111%	111%	1876%	26%	49%	99%	167%	269%
Deviation between objectives and initial report			100%					
Adjusted achievement of objectives			111%					

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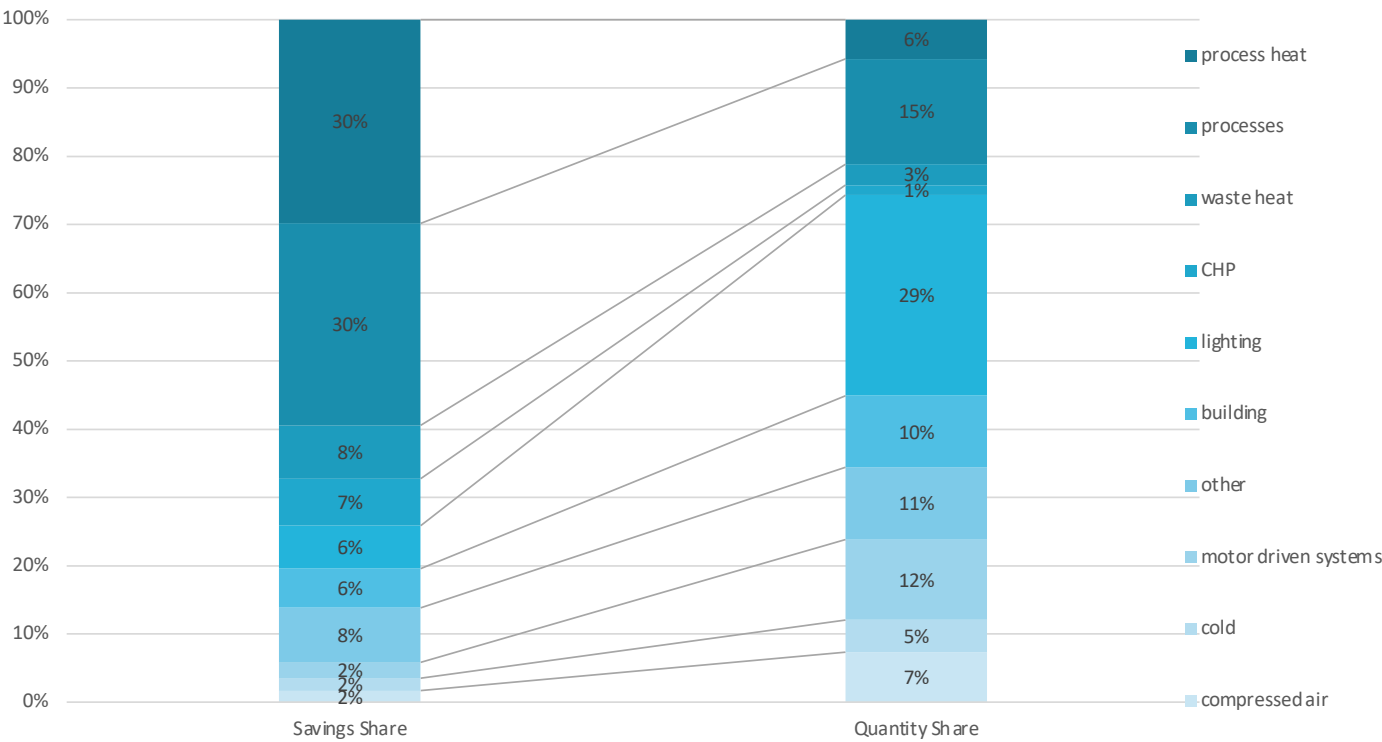
Barckhausen 2019

# Distribution of relative target achievement at the level of networks



n=87. Illustrated range: 0 - 280%. Six observations deviating strongly upwards fall outside the diagram area. Two of them were not taken into account when drawing the distribution curve as the distortion would have been too strong. (Source: Barckhausen 2019)

# Relative share of savings and measure count by technology



n=3,532. (Source: based on Barckhausen 2019)

Further findings from the monitoring of the German energy efficiency networks initiative:

### Success factors

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- **Commitment and conviction** with regard to the topic of energy efficiency both on the side of the participating companies and on the side of the moderator has a strong positive effect in various aspects of the networks, including with regard to the monitoring, where such networks typically provided data of higher quality (in terms of completeness and accuracy);
- **Provision of the necessary time and material resources** by the companies and moderators;
- **Actively engaging with the topic of energy efficiency** even before the network was officially established, which contributes to building up the necessary expertise;
- **Familiarity with and understanding of basic principles of the concept of energy efficiency networks**, such as the involvement of external experts, the importance of regular meetings, thoughtful planning, etc.;
- **Early announcing and explaining the details of the monitoring process** by the Monitoring Institute, personally contacting by telephone the networks that are due for monitoring, sending the necessary monitoring forms to the networks at an early point to give them enough time to get familiar with them, actively reaching out to the networks to clear any questions with regard to the monitoring process and/or the monitoring forms, providing support documentation such as FAQ.

Further findings from the monitoring of the German energy efficiency networks initiative:

### **Challenging factors**

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- The typical **operational problems associated with the business environment**, e.g. lack of necessary resources or expertise, longer absence or change of key staff, insufficient documentation etc.;
- On a few occasions, it has also been pointed out to the Monitoring Institute that **participation in the Initiative is voluntary** and that value creating activities always take priority in the company;

# Thank you for your attention!

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