Accelerating investments in industrial energy efficiency

A demand side view on barriers and solutions

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Overcoming Barriers to Investing in Energy Efficiency
Intensive Learning Session
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Distribution of Final Energy Consumption in EU-28

Final Energy Consumption EU-28, 2016 (by sector)

Large variation across countries

Boxplot %-share of sectoral Final Energy Consumption (EU-28, 2016)

Source: Eurostat/EEP, 2017
Example: German Industry‘s Electricity & Energy Consumption

Big influence on electricity sector, but still also depending on fossil fuels

Industry consumes 47% of German electricity (246.7 TWh). This is just 1/3rd of industrial end energy use → addressing heat important, too.
GHG emission savings from energy efficiency, 2030


Mt CO$_2$-eq

-2500  -2000  -1500  -1000  -500

World

Heating and cooling  Appliances and lighting  Industrial motors  Road transport
Average annual low-carbon investment, 2014-2040


- CCS
- Nuclear
- Renewables
- Efficiency

Trillion Dollars (2013)

2013
Central Scenario
For 2°C target

500 Mrd. USD
900 Mrd. USD

Source: OECD/IEA (2017)
Global investment in energy efficiency by sector, 2016

50+% of them in industry sectors

→ Annual investment into industrial EE needs to increase by factor 10

USD 231 billion

Source: OECD/IEA (2017)
WE NEED TO LOOK MUCH CLOSER AT THE INDUSTRIAL SECTOR
Which incentive is most wanted

Direct investment grant are favoured across the board

Which type of incentive could motivate you most likely to invest in energy efficiency measures?
(multiple choice: max. 2, n=319, n'=454)

- Direct investment grant are favoured across the board

Source: EEP Energy Efficiency Barometer 1nd half year 2015
In the coming 12 months, what percentage of your total investments can be attributed to improving energy efficiency? If you don’t know the exact figure, please estimate. (n=474)

<table>
<thead>
<tr>
<th>Category</th>
<th>&gt;=20%</th>
<th>10% to &lt;20%</th>
<th>5% to &lt;10%</th>
<th>&gt;0% and &lt;5%</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro Company</td>
<td>19%</td>
<td>22%</td>
<td>8%</td>
<td>5%</td>
<td>46%</td>
</tr>
<tr>
<td>Small Company</td>
<td>18%</td>
<td>20%</td>
<td>18%</td>
<td>6%</td>
<td>38%</td>
</tr>
<tr>
<td>Medium-sized Company</td>
<td>18%</td>
<td>24%</td>
<td>18%</td>
<td>7%</td>
<td>32%</td>
</tr>
<tr>
<td>Large Company</td>
<td>18%</td>
<td>21%</td>
<td>15%</td>
<td>19%</td>
<td>27%</td>
</tr>
</tbody>
</table>

40% of companies plan to invest at least 10% in EE

Source: EEP Energy Efficiency Barometer 2nd half year 2016
Moving towards Energy Efficiency Investment

Steps to be taken – Where to focus on (I)

1) Core & non-core industrial processes
   High return investments in periphery processes.

2) Energy Audits
   Inadequate standardisation, opportunities detected but not obligatory implemented.

3) Internal Corporate Policy
   The strategic value of EE-projects in companies is set according EU & national policy priorities.

Source: EEFIG, 2017
Moving towards Energy Efficiency Investment

Steps to be taken – Where to focus on (II)

What next?

7) Better Standards & Training
A need to reinforce the supply chain of EE project investment and execution.

6) Risk Insurance
An enhance of technical rating of transactions.

5) Specific Internal Energy Efficiency Funds
A way to identify pipelines of EE-projects and other sources of financing.

4) Energy Efficiency Networks
A potential strategic instrument for EE project delivery.

Source: EEFIG, 2017
more details in issues paper and chairman’s conclusions

Background

The industrial sector is vitally important in Europe. It covers a wide range of activities from large energy-intensive sectors to small and medium-sized companies that have very low energy consumption as a share of total costs. Europe's industry provides products for use within Europe, and it also a major exporter globally.

According to the Directorate-General for Growth, industry is the cornerstone of the European economy, producing 60% of Europe's exports, accounting for 30% of private research and innovation, and providing high-skilled jobs. The sector accounts for about 25% of the EU's GDP, and the plan is to get that to 30%. The sector is also a major energy consumer as shown by the diagram.

There has been a significant change in Europe in the last five years for increasing the priority for industrial energy efficiency. Improved energy efficiency is increasingly being seen to address mounting concerns of increased competition from Asia and the United States (because of its cheap shale gas), because of energy security concerns due to the crisis in Ukraine, because of the need to find more jobs and, yes, to increasingly meet Europe’s climate change targets. Most recently, the Commission’s Communication on the Energy Union (5212015) COM (2015) 59 final) considers improved energy efficiency as one of the five mutually reinforcing and closely interrelated dimensions designed to bring greater energy security, sustainability and competitiveness.
Current technologies, evaluated as severe barrier by energy-intensive companies

Low energy-intensive companies see economic and behavioural barriers less severe than more energy-intensive companies.
Moving towards Energy Efficiency Investment

Tailored measures

- Large Energy Intensive Companies
  - Energy Management Systems as a core value
- Large Non-Energy Intensive Companies
  - Energy Efficiency Awareness
- Mid-Cap Companies and SMEs
  - Custom-fit finance products

Industrial sector

A common issue: decision process for EE

Source: EEFIG, 2015
Barriers, perceived more severe by micro and small companies.

- Large companies rate competence-related barriers relative severe.
- Awareness raising, the most deviating.

Source: EEP Energy Efficiency Index 2017/1
Staff awareness - what do companies do so far?

- 25% of micro companies make their staff aware mainly through other activities.
- Most of the companies do not increase their staff awareness due to the lack of knowledge.

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Do you increase your staff’s awareness of energy efficiency?
Yes, by.. (Multiple choice) (n=632, n’=2510)
- 20% ... convincing employees in one-on-one discussions
- 19% ... info sessions, trainings or other means of communication
- 18% ... making the topic part of the company’s employee suggestion system
- 17% ... setting out clear provisions on energy saving behaviour
- 17% ... planned energy efficiency measures (as cause)
- 6% ... other activities

Source: EEP Energy Efficiency Index 2017/1

Do you increase your staff’s awareness of energy efficiency?
No, because .. (Multiple choice) (n=185, n’=267)
- 56% ... the steps to be taken are not clear
- 23% ... this is not of interest
- 21% ... of other reasons

Source: EEP Energy Efficiency Index 2017/1

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Stefan M. Buettner, Werner König, Florian Bottner, Prof. Dr. Sabine Leche, Prof. Dr.-Ing. Dipl. Kfm. Alexander Saue (2017)

ABSTRACT

To achieve any of the energy conservation and climate goals on a national, European or global level, much more action is required in the field of energy efficiency (EE). To achieve this, barriers of various types need to be overcome and drivers for the decision to act on energy efficiency need to be identified and broadly applied.

Building on earlier findings, this paper empirically investigates the major barriers for EE and what characteristics may play a role in determining the perceived severity of barriers. Underpinned by data of 1,005 manufacturing companies gathered in context of the Energy Efficiency Index of the German Industry (EEI), the Institute for Energy Efficiency in Production (EEP) at the University of Stuttgart and Reutlingen University’s REZ explores the role of company size, energy productivity, and in comparison with qualitative studies also geography (Northern Italy) and type of intervention (market ready innovations) in relation to barriers to energy efficiency measures (EEM). Overcoming these barriers often subsequently requires action by the management.

How to trigger that subsequent action, the decision for energy efficiency and notably raising awareness for it, is being looked at in part two of the paper. As previous work indicates, having the staff’s support is beneficial in the context of energy efficiency. Exploring how and by whom awareness is raised in aforementioned companies brings to light that whilst a vast majority of companies do it, there are differences depending on size and energy productivity of a company and quite a clear reasoning is found why the majority of the remaining companies don’t raise staff awareness.

13/03/2018
Awaiting results from ~ 1,000 companies of 27 sectors

How are energy efficiency measures financed?

- How do you finance energy efficiency measures?
  - Normal investment budget
  - Dedicated budget for energy efficiency

- How do you finance energy efficiency measures? Through...
  - Equity
  - Loan
  - Leasing
  - Hire-purchase
  - Energy Efficiency Project Loan
  - Energy Efficiency Fund
  - Crowdfunding
  - Energy Services Contract
  - Another, please describe
The Energy Efficiency Barometer of Industry (#EEBarometer)

Open until 31 July: www.eep.uni-stuttgart.de/eeei

- Reduce unknowns, risks and uncertainties
- informs decision makers about actual situation and needs of the economy
- analyses the impact and effectivity of pilot and development schemes
- informs finance sector and service providers about feasible approaches and mechanisms
- shows were companies stand in relation to others
- delivers evidence on where and how to act to increase energy productivity
- allows, in the medium-term, cross-country, sector-specific analyses -> TOP-Runner
The #EEBarometer is covering 88 countries in their 10 native languages.
The Asset Class Energy Efficiency (ACE) Project develops solutions to make energy efficiency measures more attractive for external financing. This provides the basis for the establishment of an energy efficiency asset class.

The project will run for 18 months (September 2017 to February 2019) and is funded by the Federal Ministry for Economic Affairs and Energy.

This survey is conducted as part of the ACE project.

The survey takes about 5-10 minutes.

To start, please press the "Start survey" button at the top left. To navigate through survey, please use only the buttons of the questionnaire itself.

If you have any questions, please contact diana.wang@eep.uni-stuttgart.de or +49 (711) 970-3839.

Information on data protection can be found below.

Weitere Informationen anzeigen »

Link: https://ilias3.uni-stuttgart.de/goto_Uni_Stuttgart_svy_1478166.html?lang=en
Thank you!

Any Questions?

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