Danish Energy Agency

Analysis of Danish Energy Audits

Winter 2016/17

Introduction

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- About the analysis
  - Initiated to get an overview of the findings in the energy audit scheme
  - Parallel survey of the experience of the companies (incl. their costs)

Introduction

Aim of the Analysis

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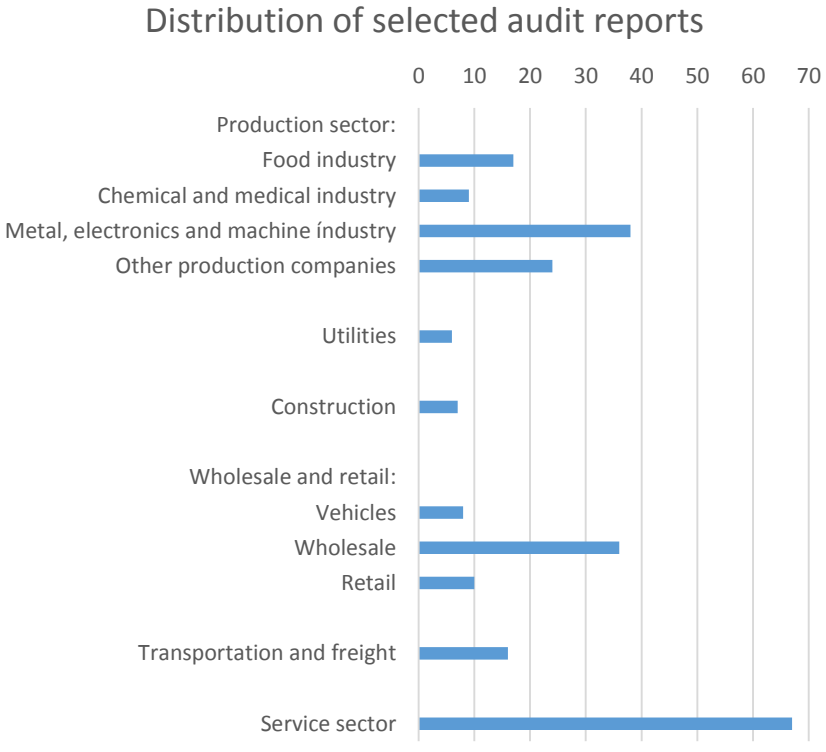
- To deliver **data about the energy savings potentials** in large Danish companies
- **To relate the companies costs of energy audits to the potential benefits** (in terms of energy savings and economical savings)
- To deliver **suggestions for the future management of energy audits** – especially in terms of reporting
- To provide useful data for other energy saving measures

Introduction

Method

- Selection of **approx. 250 energy audit reports** based
  - Distributed corresponding to the sizes of sectors in the entire population, otherwise random
  - Around 20 % of the considered reports were not found useful for this purpose
  - Companies that already have an energy- or environmental certification, **ISO 14001 or 50001, were excluded** from the analysis
- Collection of data from the reports
- Data analysis



Introduction

Challenges

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- Which sector does companies belong in?
- (Very) **different structures and levels of detail** in different reports
- **Non-digitalized** reports
- **Limited data** on certain parameters
- **Multi site** companies
  - How much is included in the energy audit?
  - Is the included part representative for the entire company?
- **Multi national** companies
  - Hard to find out which companies that are in scope
  - ”Satellite” branches that are extremely small

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Results

Results

Overall potentials

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Current Energy Consumption	Potential Yearly Energy Savings	Potential Savings Share of Consumption	Total Investments	Yearly Economical Savings	SPP* (ex. Subsidies)	SPP* (incl. Subsidies)
[GWh/year]	[GWh/year]	**[%]**	[€]	[€/year]	[years]	**[years]**
5.112	807,4	**15,8%**	336.334.801	64.840.181	5,2	**4,9**

*Simple pay-back period

Results

Simple Pay-back Period

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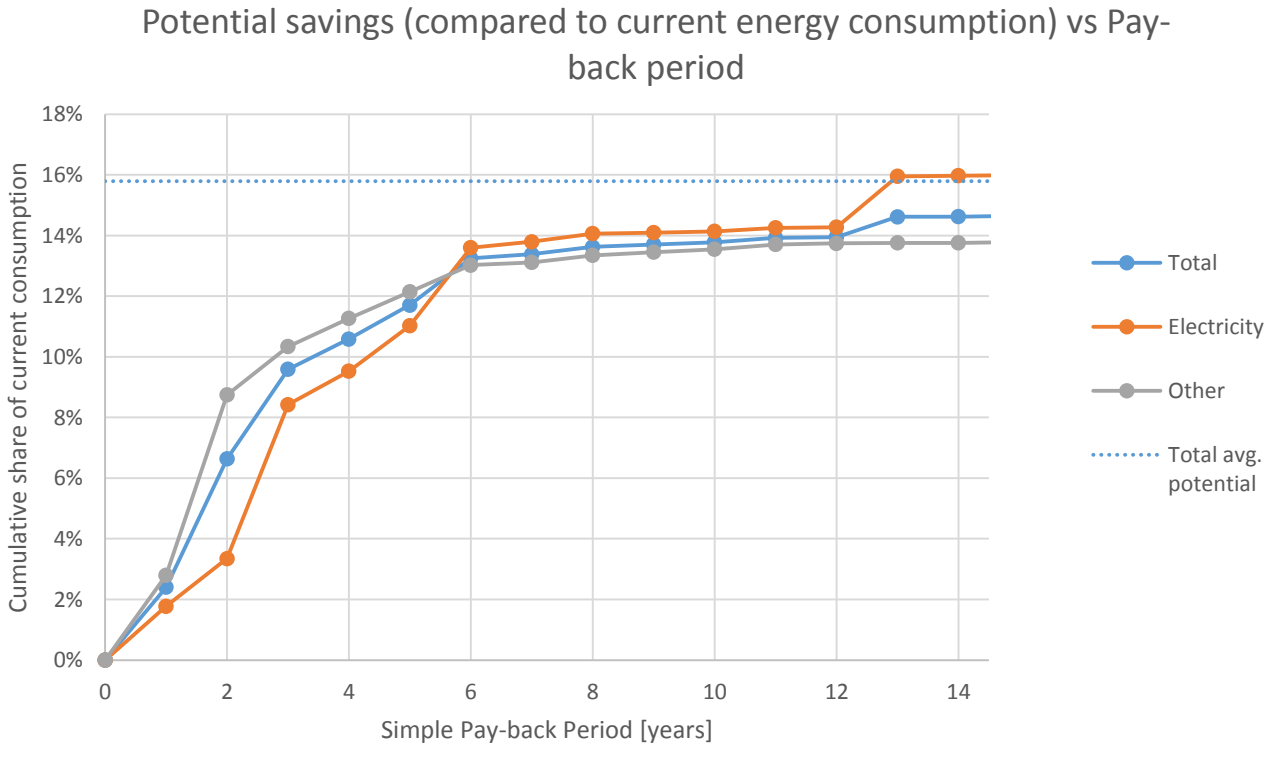
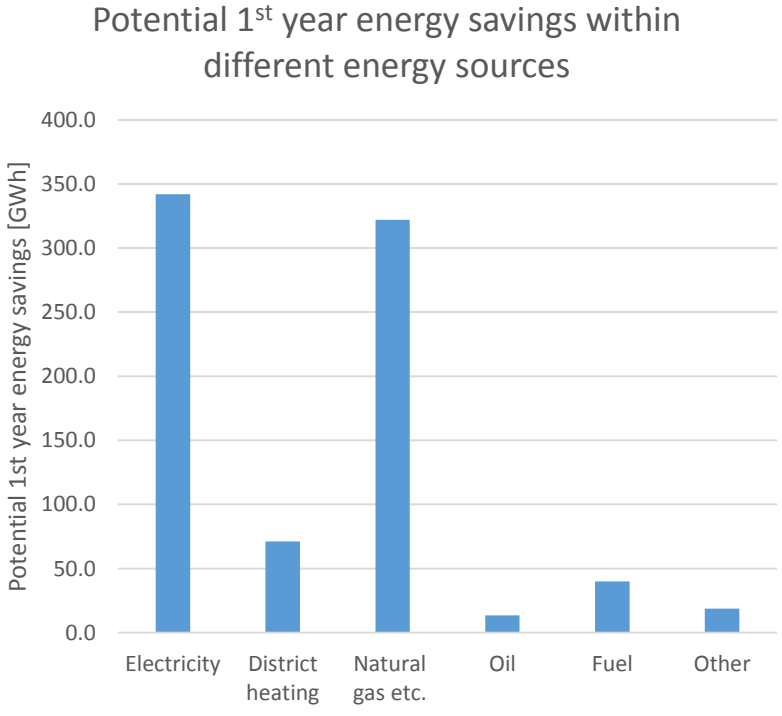


Results

Potentials Distributed on Sources

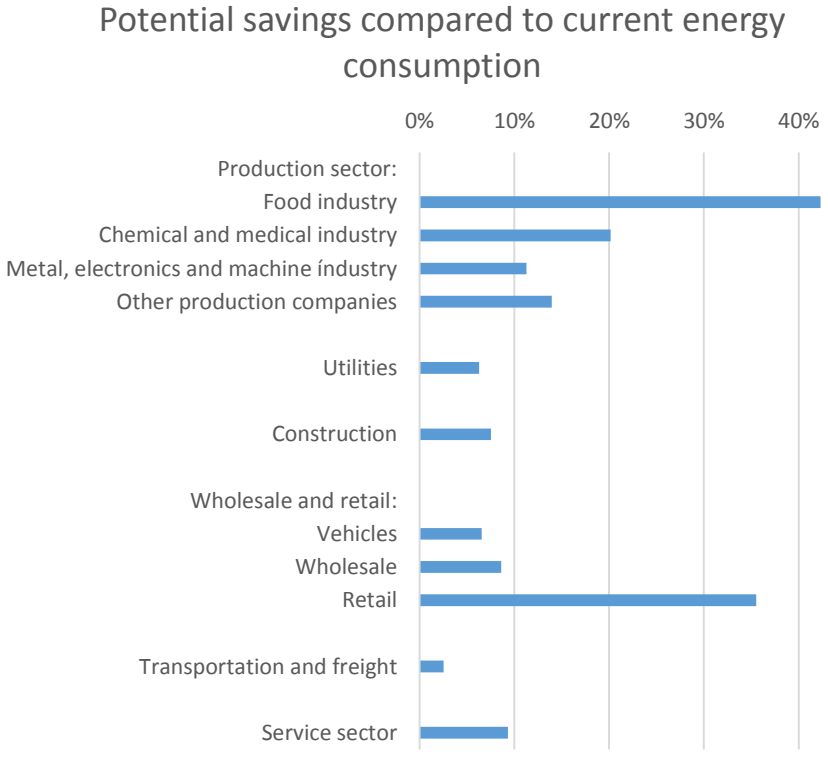
- Electricity and natural gas have the biggest potentials
  - Natural gas especially because of conversions, which on the other hand minimizes the overall potential in district heating



Results

Potentials in Different Sectors

- Biggest potential in food industry and retail
- Low relative potential and long pay-back periods in transport and freight services



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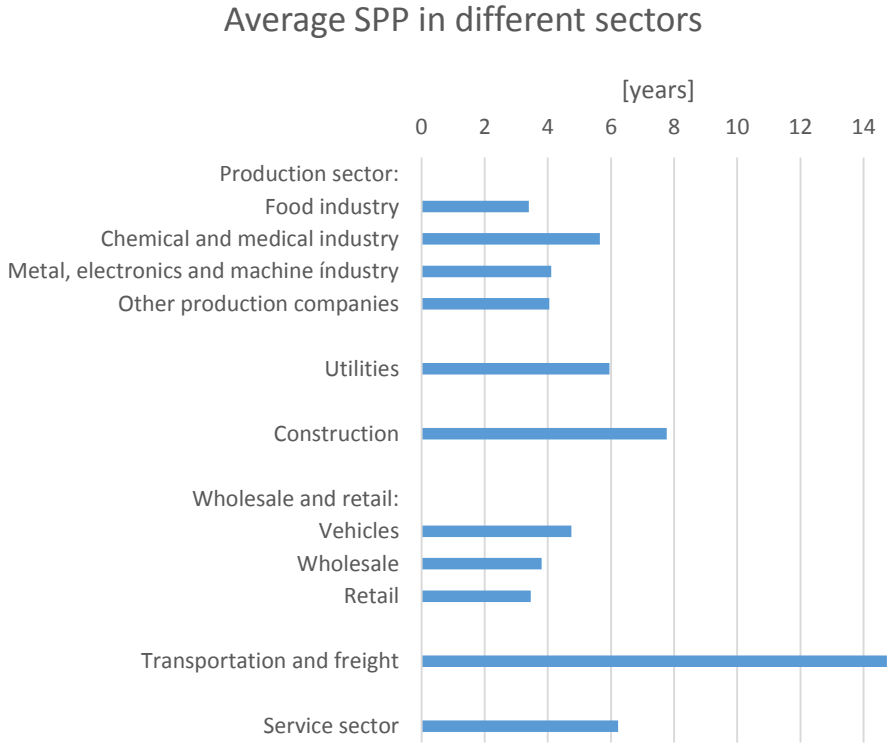
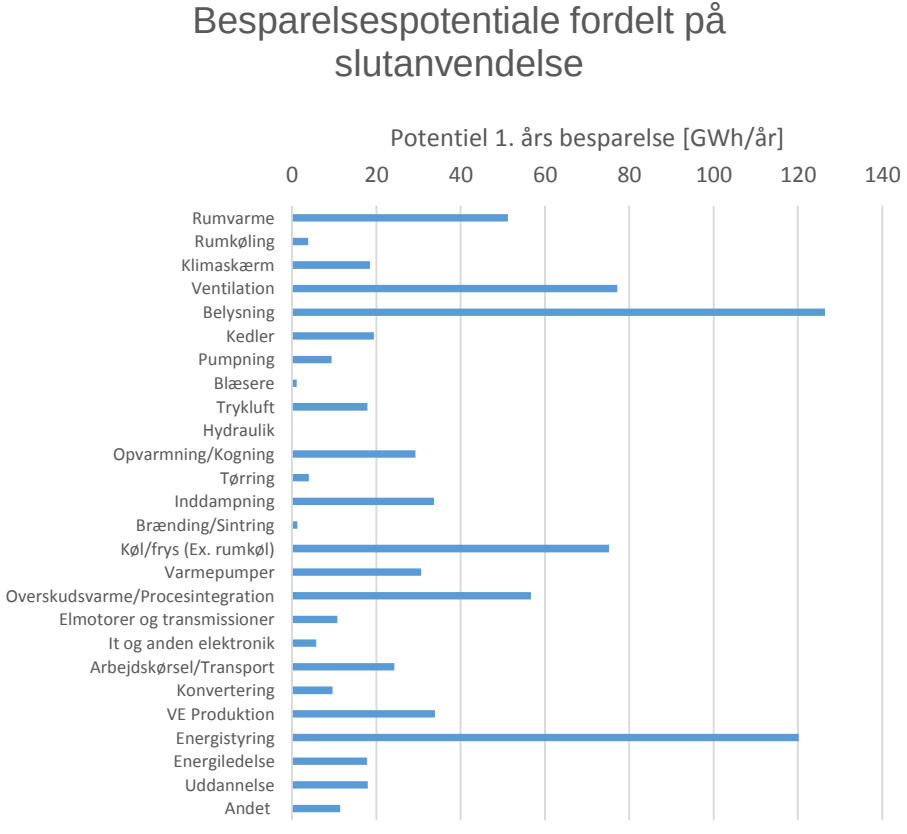


Results

Potentials in Different Technologies

- Biggest potentials in lighting and energy management
  - Also large potentials in ventilation and cooling



Results

Cost of Energy Audits

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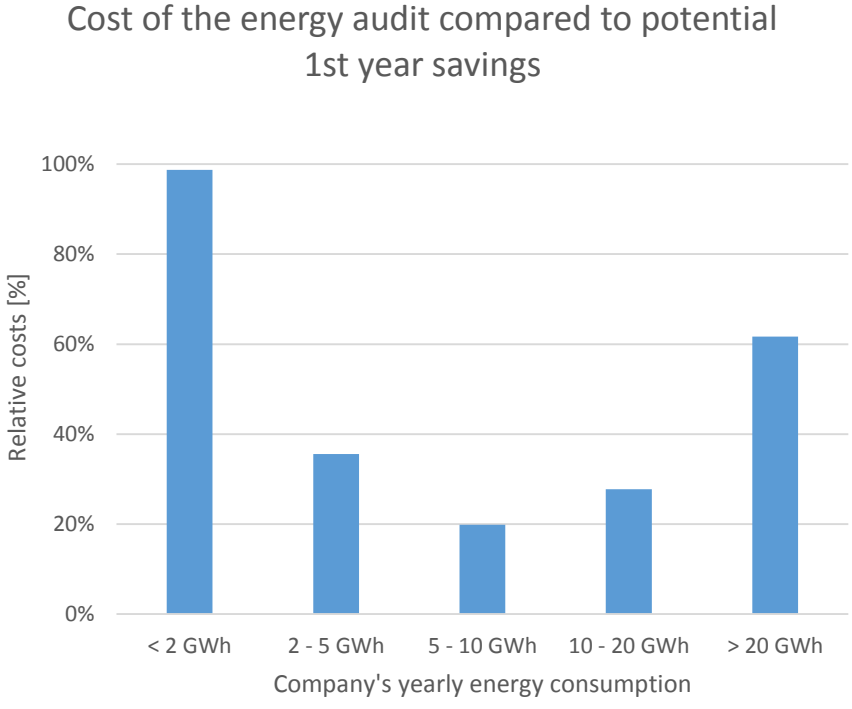
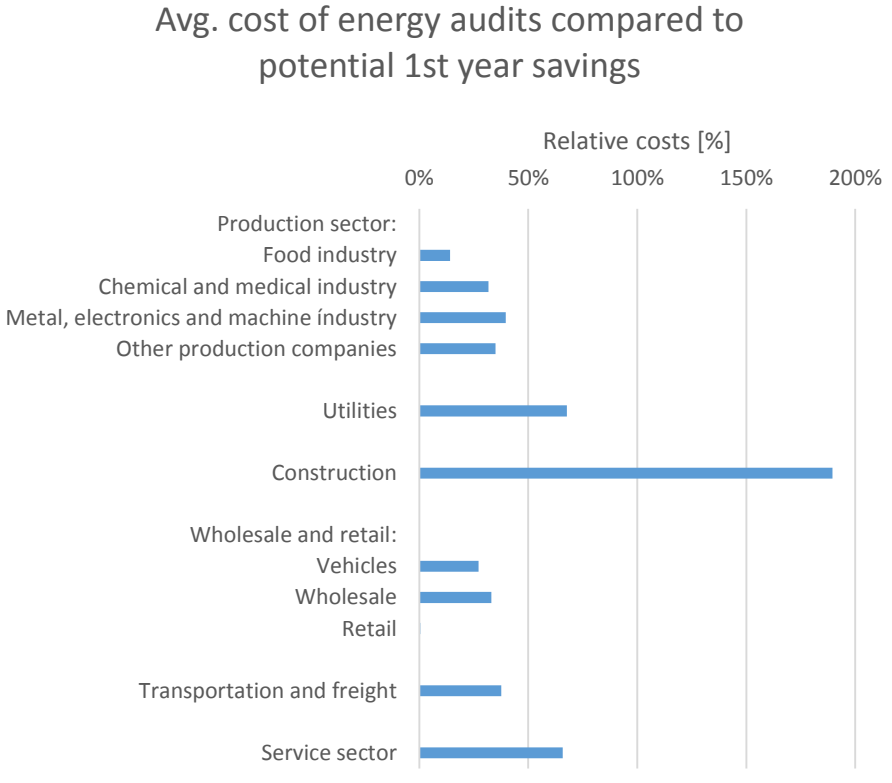
- Highest relative cost for the companies with little energy consumption
- Relatively high cost for larger companies
  - Complex energy structures
  - Certain challenging businesses represented in this category
  - Already a large incentive when energy cost are high
- Average pay back period for the audits is 0,5 years



Results

Cost of Energy Audits

- Construction and utilities have the highest costs compared to potential 1st year savings
- Average cost of 42 € pr. potentially saved MWh



Results

Evaluation/survey

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- Approx. **70 %** of the responding companies have implemented and/or plan to **implement some measures** as a consequence of the energy audit
  - **37 % have implemented** an plan on implementing further projects
  - 33 % plan to implement
  - 14 % have/plan to implement, but not because of the audit
- Most implementations have been in **lighting and ventilation**
- The **biggest barrier for the companies is costs** of implementation compared to possible savings
  - Unsubstantiated projects is another

Suggestions for future audits

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- Standardized and digital reporting
  - Easier to utilize the already produced data
  - Much more clear for consultants and companies what is expected
- Exclude companies with very small energy consumptions in DK
  - Very limited possibilities for changes
  - Not worth the costs of the audits
- Include data on life span of propositions
  - Would make it possible to calculate life time cost instead of simple pay-back period

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Thanks for your attention

Questions?

Extra

Cost of Energy Audits

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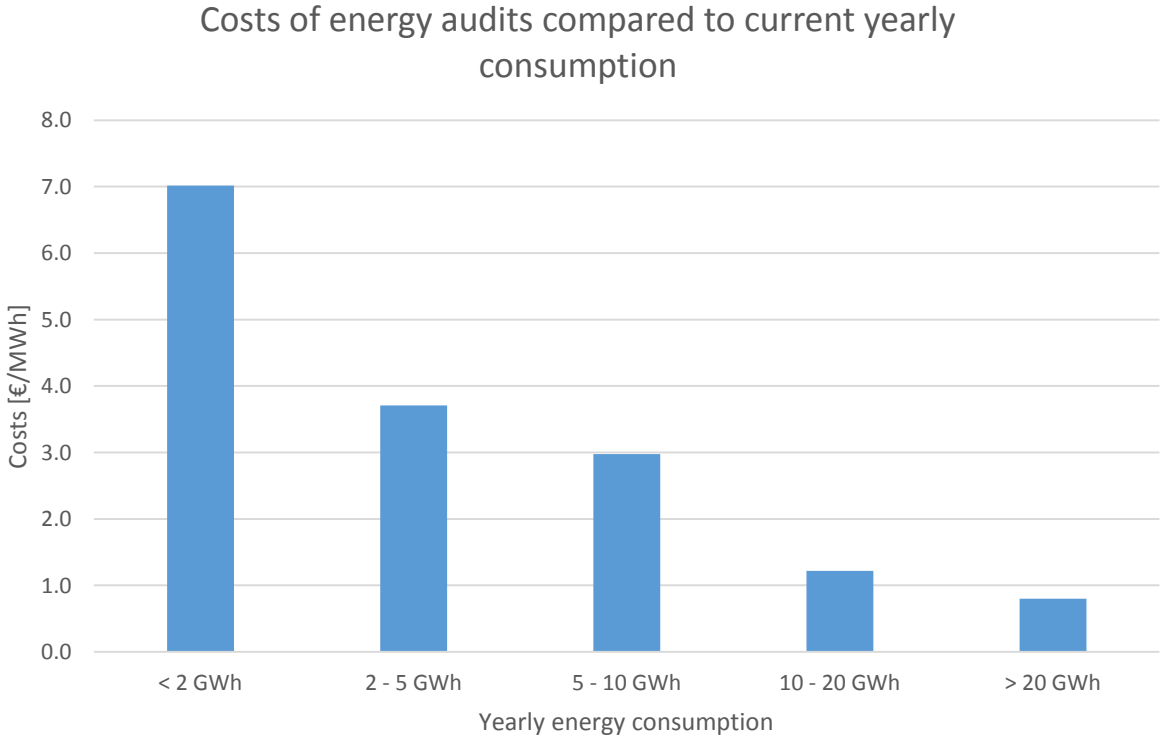

Extra

Cost of Energy Audits

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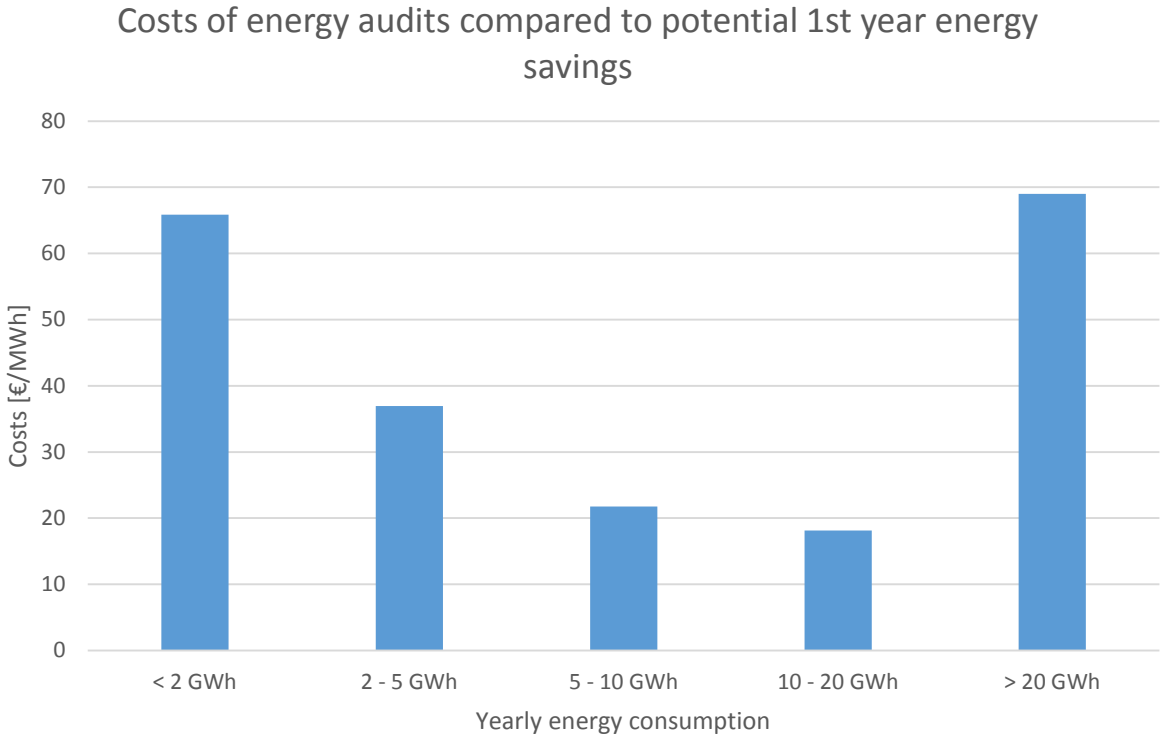

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Savings vs Size

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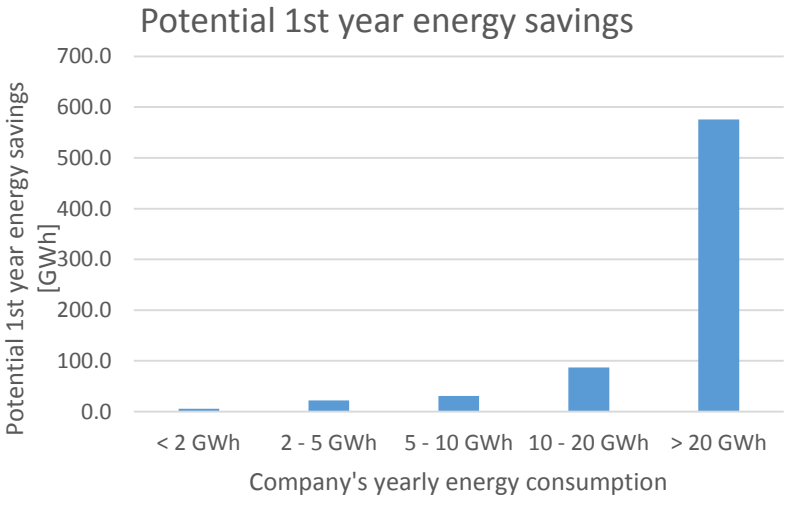

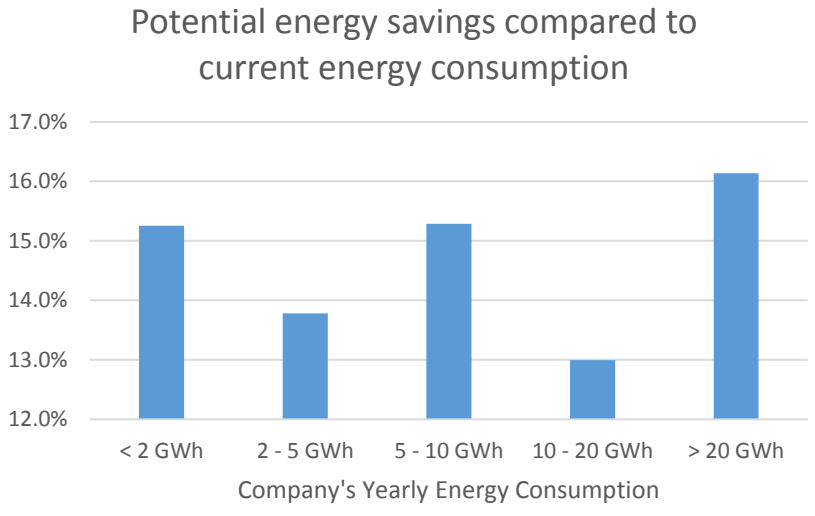

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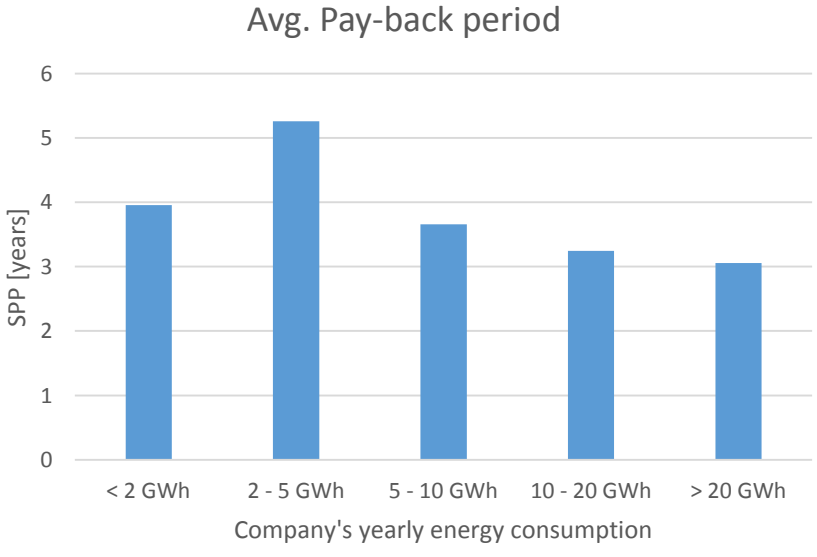

Suggested schemes for reporting

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Skema 1 - Oplysninger på virksomhedsniveau

		Enhed	Bemærkninger
Virksomhedsdata			
Virksomhedsnavn			
CVR nr.			
Dato for energisyn		[dd.mm.åååå]	
Branche		[NACE kode]	
Evt branche #2		[NACE kode]	
Evt branche #3		[NACE kode]	
Evt branche #4		[NACE kode]	
Areal		[m2]	
Antal medarb		[-]	
Ejer-lejer forhold		[ejer/lejer]	
Koncernforhold			
Samlet energiforbrug (før-situation)			
El		[kWh/år]	
Fjernvarme		[kWh/år]	
Naturgas		[kWh/år]	
Olie		[kWh/år]	
Benzin		[kWh/år]	
Diesel		[kWh/år]	
Bio		[kWh/år]	
VE		[kWh/år]	
Andet		[kWh/år]	
Totalt forbrug		[kWh/år]	
Samlede energiomkostninger		[kr/år]	
Besparelsens nøgletal			
Samlet investering:		[kr]	
Evt samlet tilskud		[kr]	
Samlet reducering af energiforbrug		[kWh/år]	
Samlet reduceret energiomkostning		[kr/år]	
Samlet TBT		[år]	

Suggested schemes for reporting

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Skema 2 - Oplysninger på tiltagsniveau

Tiltags ID	Tiltagstype*	Beskrivelse af tiltag	Energiart**	Årlig energibe-sparelse	Evt energiart # 2**	Evt besparelse energiart # 2	Årlig besparelse	Anlægs-investering	Medregnet tilskud	TBT (eks. evt. tilskud)	TBT (inkl. evt. tilskud)	Skønnet levetid	Anbefalet	Evt CO2 reduktion:
[-]	[-]	[-]	[-]	[kWh]	[-]	[kWh]	[kr]	[kr]	[kr]	[år]	[år]	[år]	[ja/nej]	[ton/år]