



The Danish Energy Efficiency Obligation (EEO) Scheme

Advisor Morten Ladegaard Petersen

mdp@ens.dk

Presentation at ODYSSE-MURE meeting

Vienna, April 2018

Outline

- Introduction to the EEO scheme in Danish energy policy
- Main principle of the EEO scheme
 - Obligated companies
 - Sectors covered
 - Organization
 - Monitoring and verification
 - Financing
- Main results from 2006 to 2016
 - Overall saving and their distributions
 - Development of cost and sharing of cost
 - Cost-efficiency
- Reflections
 - What has worked well?
 - What are the problems and why isn't the system popular in Denmark currently?
 - What have we learned – guidance for developing a new scheme

Introduction of EEO

- EEO scheme was decided in 2005 and implemented in 2006
 - Agreement with grid and distribution companies
- Designed to deliver on the Danish energy targets
 - Independent of fossil fuels in 2050
 - Energy efficiency improvements
 - Reduction of end-use consumption
 - Conversion from fossil fuels to renewable energy
- New agreements in 2008, 2012 and 2016

Main principles

Legal basis

- A legal basis for EE obligations for was amended to the supply acts in 2006 for grid and distribution companies;
 - Electricity (55)
 - Natural gas (3)
 - District heating (405)
- For oil companies (suppliers of oil to heating) a voluntary agreement was made

Main principles

- Annual individual saving target for companies
- Large freedom to deliver
 - **Methods**
 - **Banking and borrowing allowed from year to year**
- Utilities can only count savings where they are direct or indirect involved in the implementation
 - **Information, energy audit, subsidies, etc.**
- Cost-recovery from energy consumers via grid and distribution tariffs

Overall targets

Target is set for final energy consumption

	PJ	% of final*
2006-2009	2,95	0,7
2010-2012	6,1	1,5
2013-2014	10,7	2,6
2015	12,2	2,9
2016-2020	10,1	2,5

* Final energy consumption in 2010. Energy used for transport are excluded

Measurement of saving

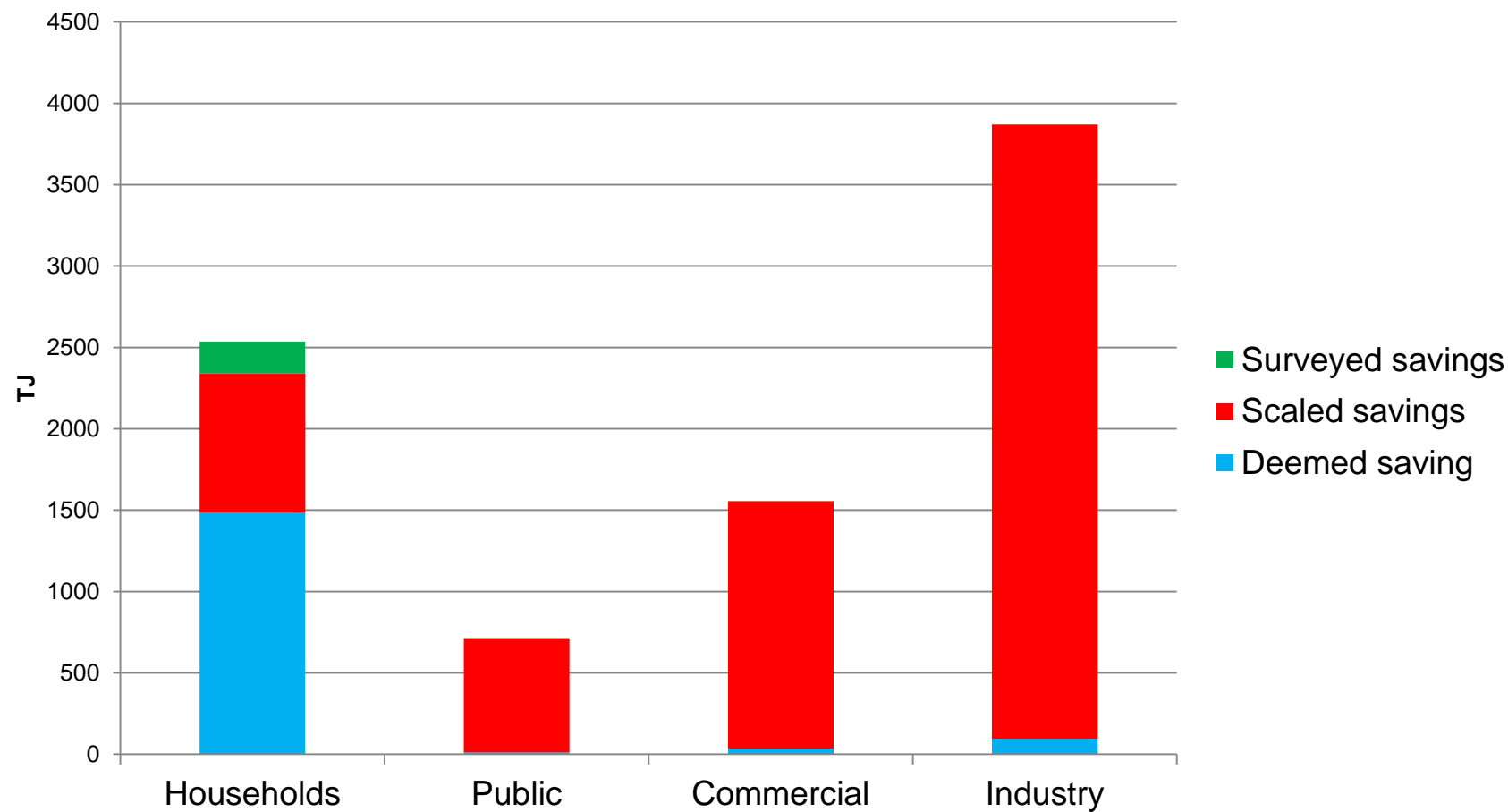
The main principle

- First year savings – not cumulative
- Simple weighting factor was introduced from 2011
 - Reflect primarily lifetime expectancy, but also primary energy and non-ETS

Methods:

- Standard values – deemed savings
 - Average saving for standard activities
 - Developed by experts and approved by DEA
- Specific calculation – scaled savings
 - Used for all big projects, especially industries, public sector etc.
 - Utilities are responsible for specific calculations

Scaled savings very important



Who does the job?

- The grid and distribution companies are not allowed to do very much by themselves
 - Regulated monopoly companies
- Have to involve an actor
 - A service company in the same group with same owner
 - But often a private engineering company or a plumber, construction company, ESCO, etc.
- There can be several links from the utility to the consumer

Verification

1. The grid and distribution companies are responsible for

- Verification, documentation and reporting
- Quality control systems and independent annual audits

2. Annual random control by DEA

- Quality control systems
- Documentation of actual cases/projects
- Small sample – but different every year
- Only very small correction of savings (3-6%)

3. Independent evaluation every third year

- Big sample, not only verification

Financing of activities

Total 200 mio. Euro per year spend on EEO

Net-zero financing of EEO

- All the cost are covered – no profit

Electricity and natural gas distribution companies:

- A extra tariff to the regulated price cap
- Cover their actual costs

District Heating: Just a part of their normal cost

- Also extra tariff but not regulated price cap

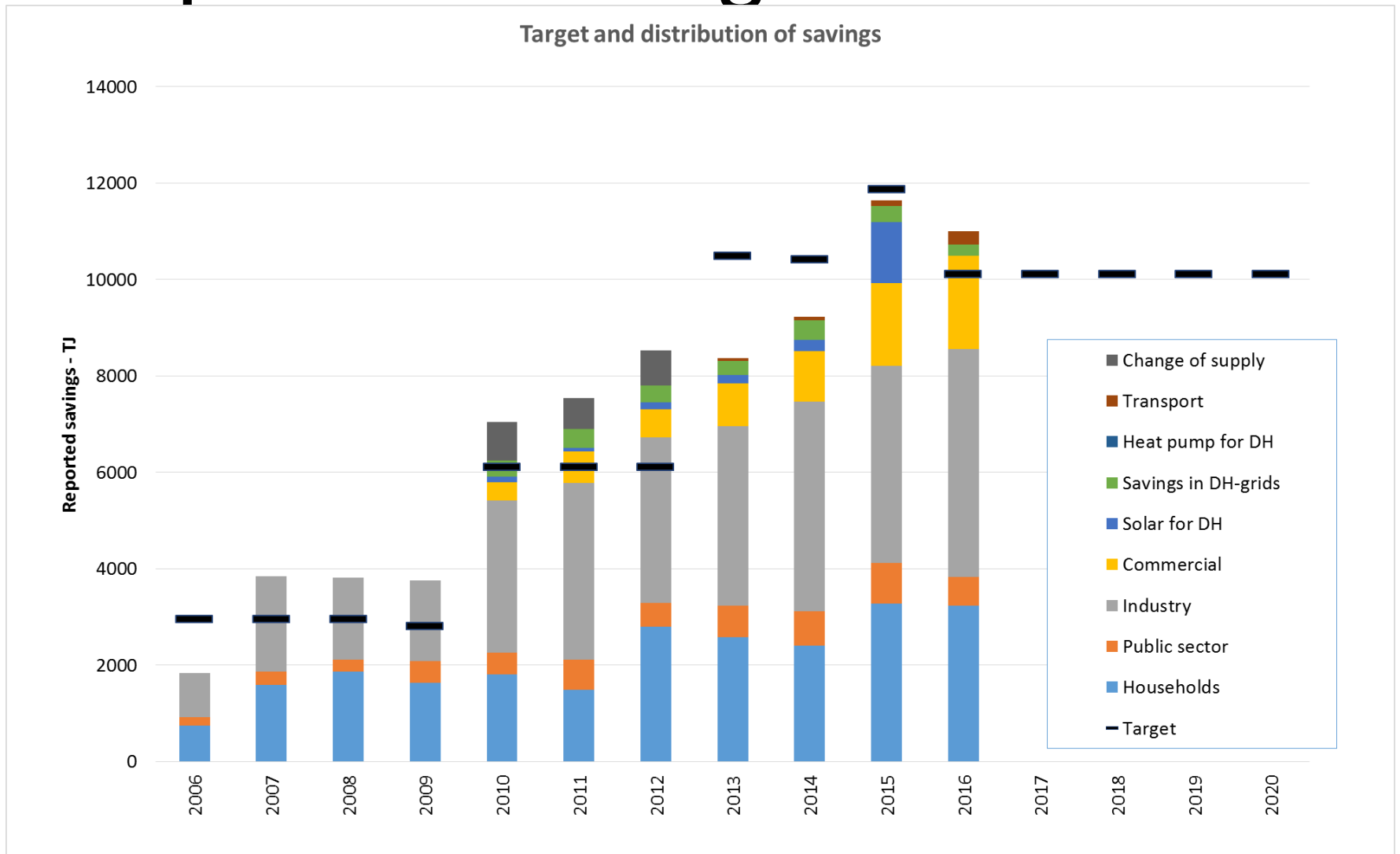
Oil: Commercial companies – a part of their tariffs

Relation to EED target

- The basis has been final energy – not sales to final customers
- Not all savings are eligible
 - Weighting factor – lifetime expectancy
 - Boilers and heat pumps – both a new boiler and conversion to an other heating system
 - Other ecodesign requirements

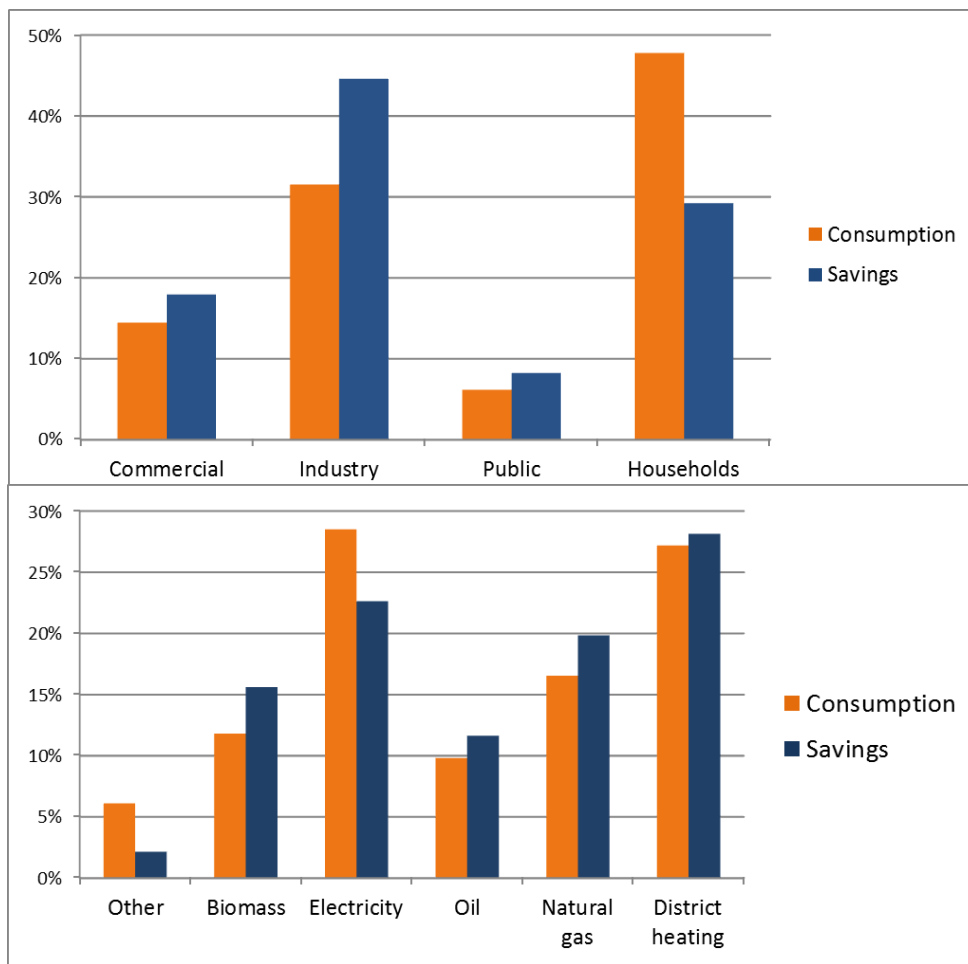
Main results

Reported savings

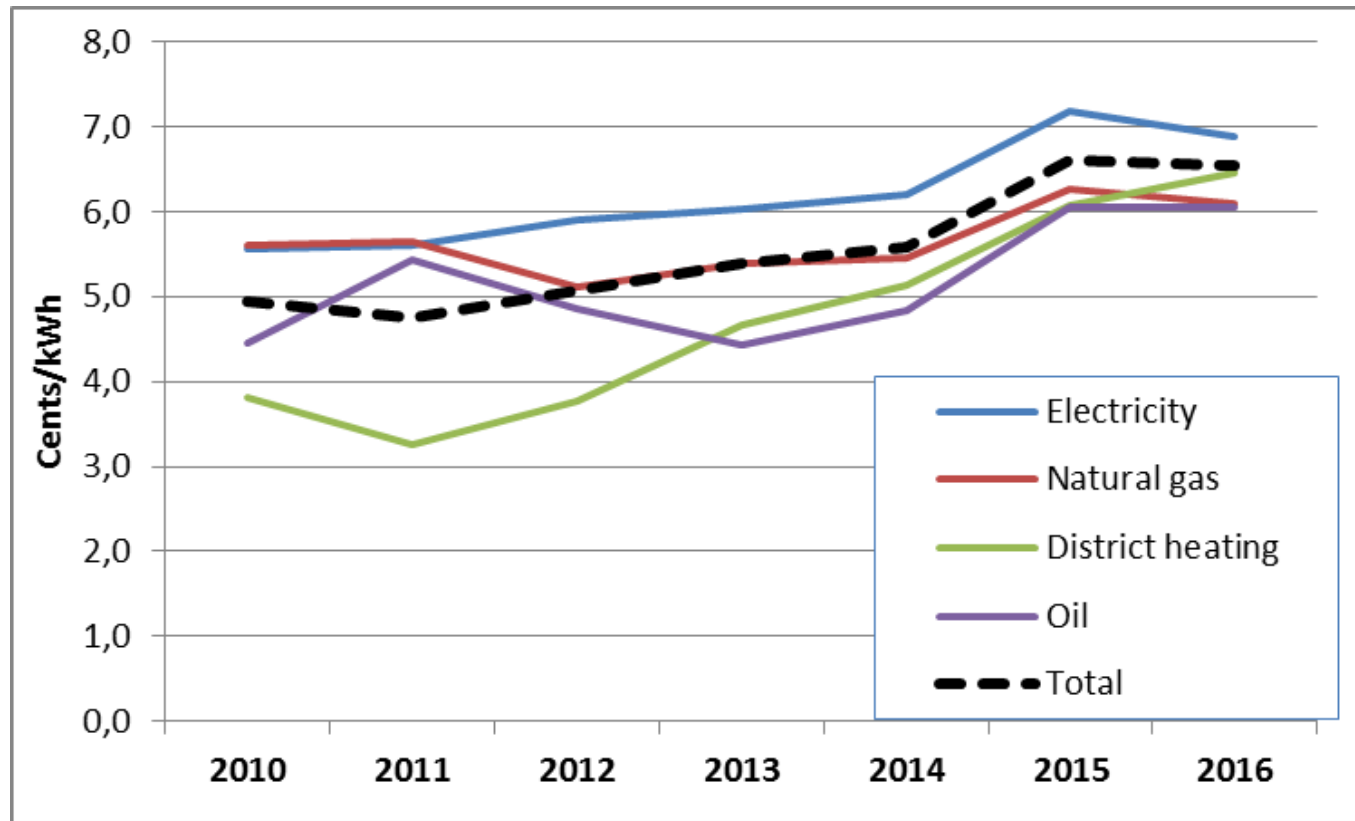


Distribution in sectors and fuels

- Between sectors
 - More in private firms
 - More in public sector
 - Less in households
 - SME maybe a problem
- Between fuels
 - Very good distribution
 - More natural gas and biomass
 - Less electricity



Costs per saved kWh



- 6-7 Eurocents per kWh first year savings
- 0,6-0,7 Eurocent per kWh with an life expectancy of 10 years

Economic impact

- The independent evaluations shows positive economic impact of the scheme
 - Positive for industry, commercial and public sector
 - Negative for households
- Our own updated socio-economic evaluation shows also a positive impact also for household

Reflections

The system have worked well

- All branches have fulfilled their The utility cost have not increased very much
- In general cost-effective
- A lot of actors and energy services providers have been involved
- The evaluations shows that the end-users and involved actors are very satisfied with the system

But there are problems

- The organisations representing the obligated companies are very negative
 - Made the 2016-agreement very difficult
 - They want the suppliers of oil and coal involved
- Strong critique
 - In the media
 - From independent suppliers of energy savings
 - From Rigsrevisionen (National Audit Authority)
 - And now also from several of the political parties and from the minister

Main critique

- Fraud
 - Cavity wall insulation, biomass boilers, etc.
- Cross-subsidising between consumer groups
 - Households pays much more then they received
 - Industry receive much more than they pay
- Profits in affiliated companies (transfer prizing)
 - The obligated distribution companies have signed contract with retail sales companies, etc. in the same group
- No strong incentives to reduce the cost
 - Net-zero economic regulation

Actual situation in Denmark

- The actual agreement will run until the end of 2020
 - Very few want to continue with EEO after this
- Yesterday the Danish government presented a new proposal for a new energy agreement for 2021-30
 - Tender model in the periode 2021-24
 - Targeting only industries
 - Financed by the public budget
 - 50 mio. EUR per year. (compared to the 200. mio. EUR in current model)

Considerations for new EEO's

- Distributors or retail sales companies?
 - All companies or threshold?
 - Involvement of all fuels?
- Obligations certificates
 - Will a market for trading work well?
- Integrated approach with consulting
 - Subsidies alone will not deliver enough
- Clear rules for monitoring and verification
 - What do you want to monitor?
 - Focus on documentation and quality control

Further information

Actual agreement – English translation:

https://ens.dk/sites/ens.dk/files/Energibesparelser/energispareaftale_161216mbilag_6_eng.pdf

Website with a lot of information (in Danish):

<https://ens.dk/ansvarsomraader/energibesparelser/energiselskabers-energispareindsats>

Thank you for your attention!

mdp@ens.dk