Energy Efficiency Obligation Schemes in the EU

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Outline

- About the EEO Scheme at the EU level
- The EEO Schemes with focues on industrial sector

  - The EEO Scheme in Denmark

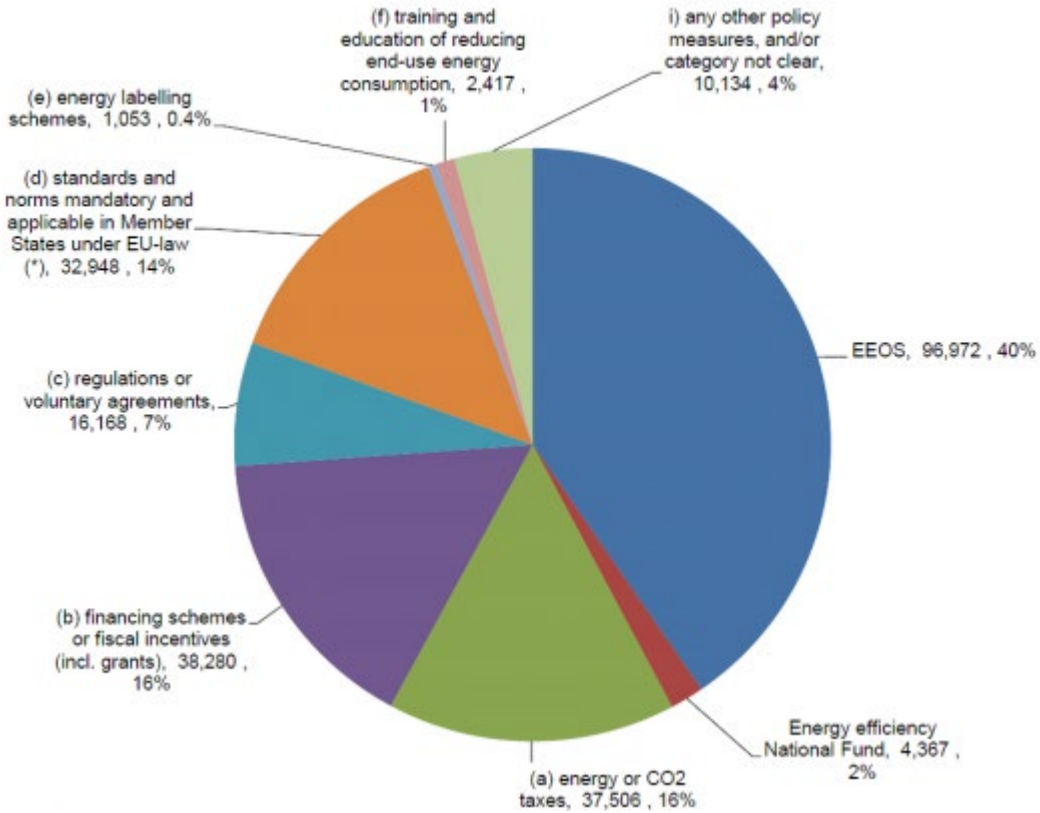
  - The EEO Scheme in Italy
- Concluding remarks

Energy Efficiency Obligation (EEO) Schemes in the EU

Under the Energy Efficiency Directive (2012), EU countries must set up an EEO scheme (art. 7a), alternative policy measures (art 7b) or a combination of the two mentioned options.

- The EEO scheme requires all energy distributors or all retail energy sales companies to achieve yearly energy savings of 1.5% of annual sales of energy to final consumers.
- In order to reach this target, companies need to carry out measures which help final consumers improve energy efficiency.
- This may include improving the heating system in consumers' homes, installing double glazed windows, or better insulating roofs to reduce energy consumption.
- The sales of energy, by volume, used in transport may be partially or fully excluded from this calculation.

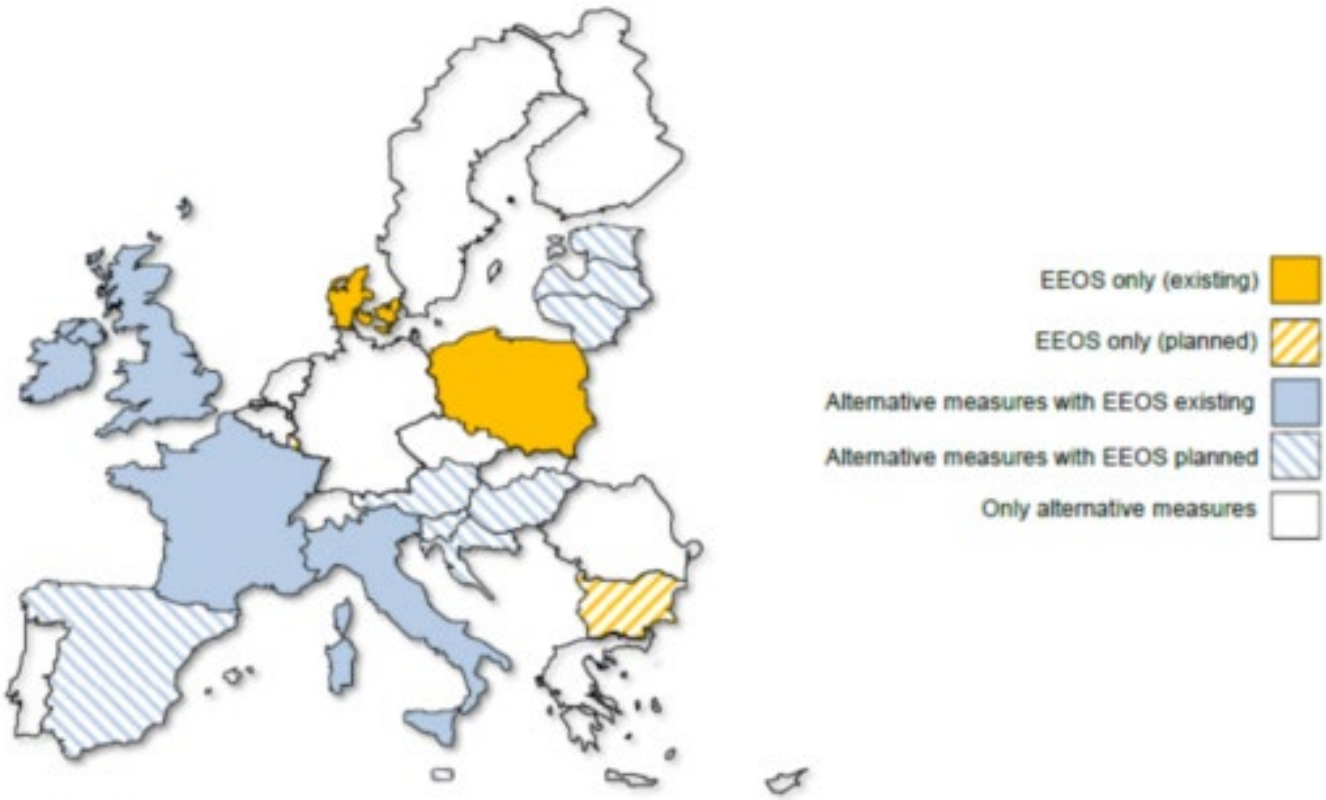
The Policies for Energy Saving, reported by member states to the EU



Member States were obliged to outline policies they will use in achieving their energy savings targets. This chart shows the aggregated effects of these policies, based on an investigation of all submitted NEEAPs. It can clearly be seen that EEOs are expected to derive the greatest impact.

Source: Rosenow J., Forster D., Kampman B., Legujit C., Pato Z., Kaar AL., Eyre N., Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive, (London, RICARDO-AEA, 2015), p 5

EU members with EEO schemes



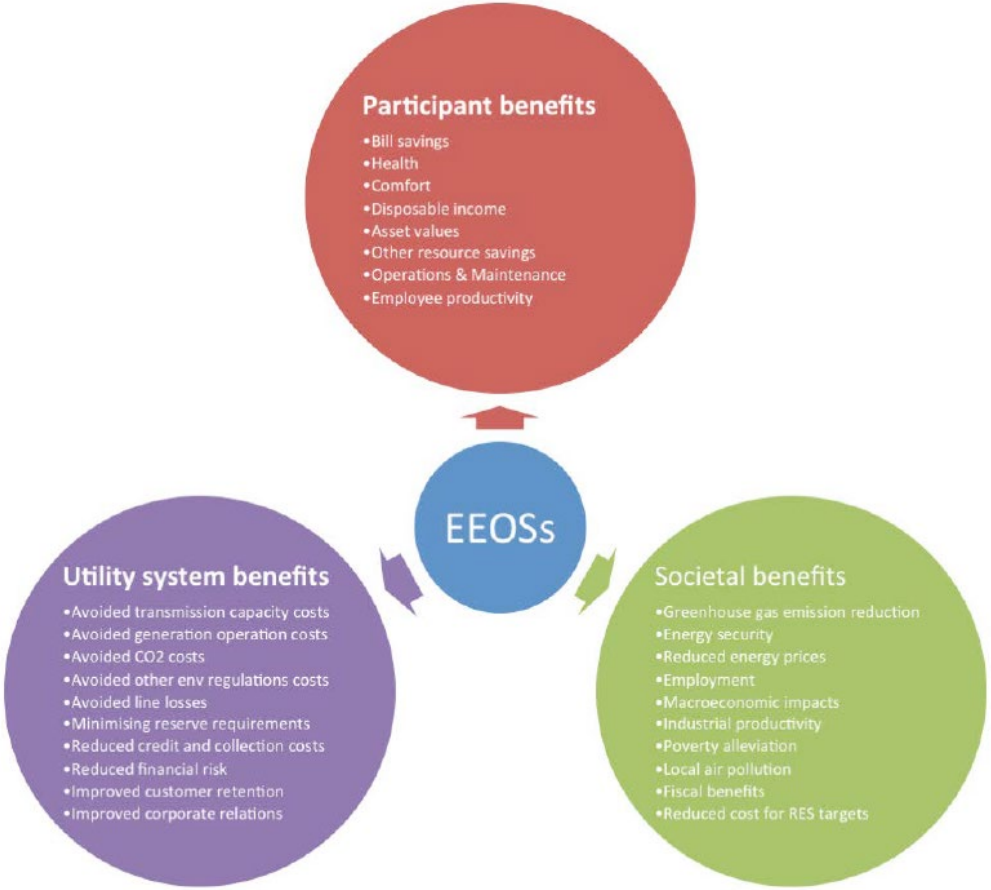
Member States have responded differently to the Energy Efficiency Directive and Article 7. So far 15 EU member states have EEO Schemes or plan to establish it. The adoption of these policy instruments largely depends on local circumstances.

Source: Rosenow J., Forster D., Kampman B., Legujit C., Pato Z., Kaar AL., Eyre N., Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive, (London, RICARDO-AEA, 2015), p 16

EU Member states with EEO Schemes

- 17 MS reported they will adopt an EEO scheme.
- 6 of them, Italy, Denmark, France, UK, Poland and Ireland, have already implemented it. Within Belgium, the region of Flanders has also implemented an EEO scheme, which has been active since 2002.
- Another 11, Austria, Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Slovenia and Spain, are planning to do so in the future.
- Bulgaria and Luxembourg are the only MS from this list that are planning to adopt an EEO scheme exclusively, without alternative measures, while others will also implement alternative measures.

The Multiple Benefits of EEO Schemes



Source: Rosenow, J. & Bayer, E., 2016. Costs and Benefits of Energy Efficiency Obligation Schemes.

Assessment of the existing EEO schemes

- Redesigning of the scheme is necessary to improve the effectiveness thereof and to adapt to a changing market.
- Most schemes have grown incrementally and steadily in scale.
- Besides the savings target, the number of obligated parties (and linked markets) have grown over time.
- Most schemes focused so far on the buildings sector, promoting low-cost measures like roof insulation.
- When the aim is to have a scheme with many active parties, rules need to be kept simple, transparent and easy to understand.

Overall effectiveness of EEOs

- EEOs are a proven and effective route to delivering incentives for proven, low cost, mass-market measures.
- Most countries have decided that alternative policies outside the remit of utilities are necessary to meet their energy savings target.
- Both EEOs and other approaches can provide user incentives. Their relative roles require further analysis.

Barriers

Most cited barriers impeding implementation of alternative measures in compliance with Article 7 requirements are:

- Insufficient fundability from end users, ESCOs and difficulty in access to finance;
- Past energy efficiency market activity focused on low hanging-fruit (i.e. the rapid implementation of measures with short payback periods);
- High public cost associated with fiscal measures; Low technical capability of municipalities' and banks' technical staff;
- Lack of awareness and motivation from public entities and households for participation.

The EEO scheme in Denmark

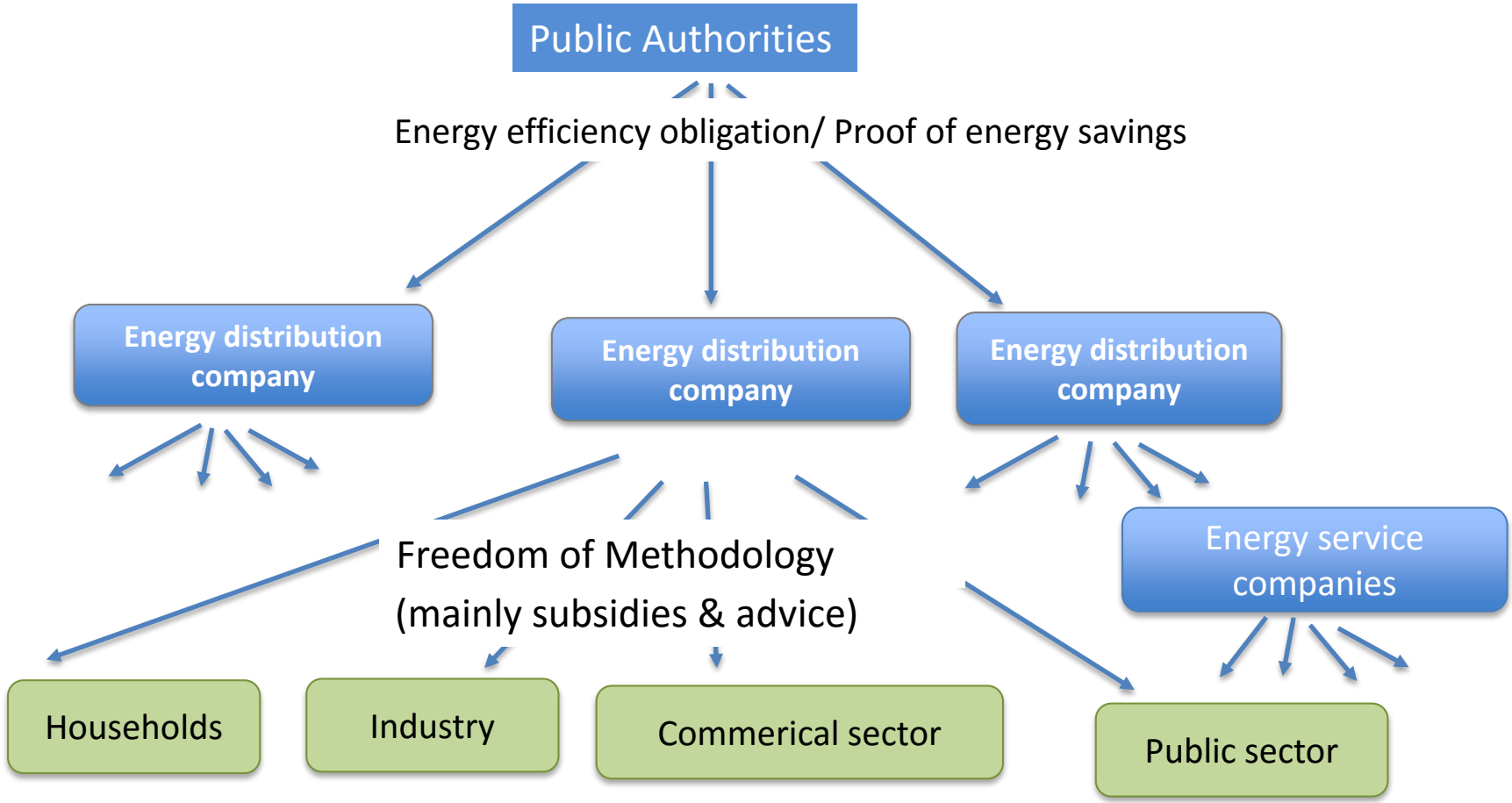
- Long history of energy companies (grid companies) working with energy efficiency 1995 to 2006: DSM Electricity
  - From 2000: Natural gas and district heating
- The EEO scheme in Demark was decided in 2005 and implemented in 2006
  - Agreements with grid and distribution companies
- Designed to deliver on the Danish energy targets
  - Independent of fossil fuels in 2050
  - Energy efficiency improvements to reduce end use consumtpion
  - Conversion from fossil fuels to renewable eerngy
- New agreements in 2008, 2012 and 2016

The EEO Scheme in Demark

Features	Remarks
Policy Objectives	To decrease total primary energy consumption by 7,6 % in 2020 compared to 2010.
Legal Authority	Voluntary agreements by obligated parties and the Danish Energy Agency within a legislative framework.
Fuel Coverage	Electricity, natural gas, district heating, and heating oil. The transport is not included.
Sector and Facility Coverage	Residential, public & private business and industry end-users.
Obligated Parties	500 grid and distribution companies for electricity, gas, district heating and oil
Measurement, Verification, and Reporting	Distributors verify and report savings; can be calculated or deemed savings. Yearly random sample control.
Compliance Regime	Energy savings must be well documented and they must be verifiable by an independent party if chosen for control
Eligible Energy Savings	Distributors must engage third parties to achieve energy savings outside own distribution area or energy type except for transport
Eligible Energy Efficiency Measures	Many types, including energy audits, subsidies for efficient appliances, equipment and retrofitting; also small scale renewables
Trading of Energy Savings	Energy savings, when realised, may only be traded among obligated energy distributors
Funding	Cost recovery through tariffs

No sub-targets and Portfolio Requirements; no penalty

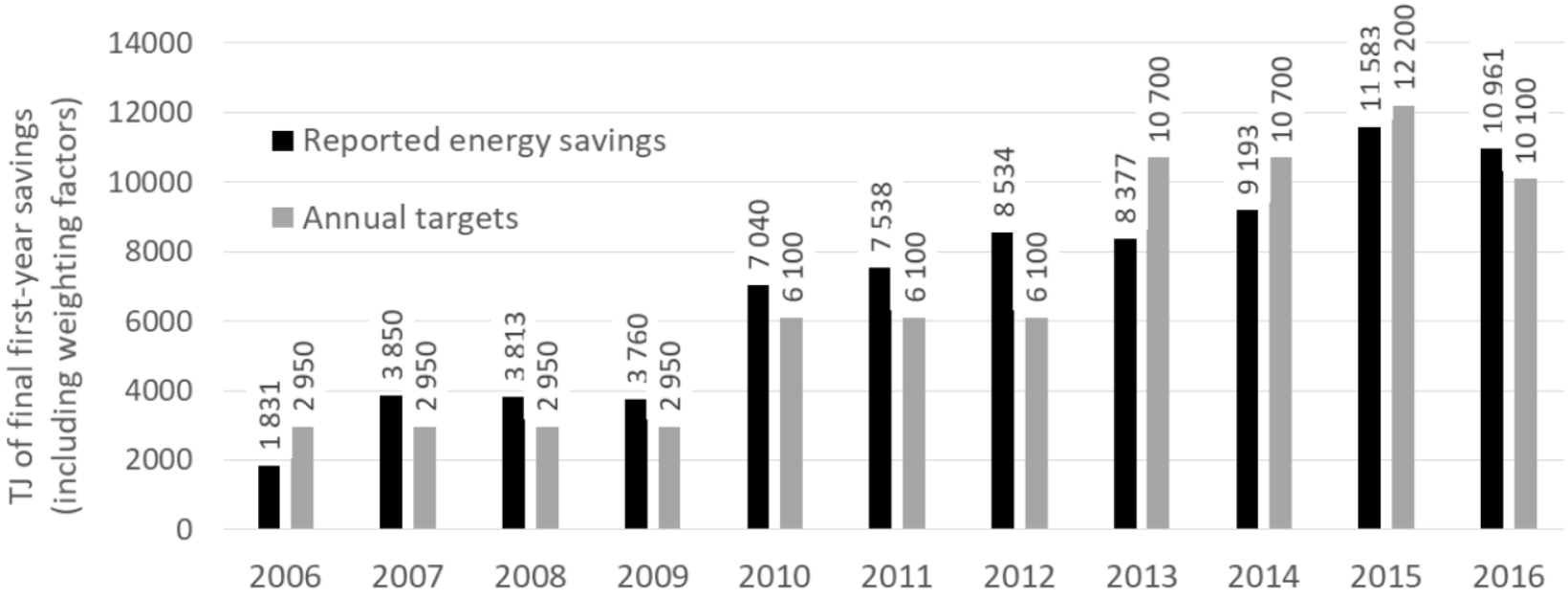
The Danish Energy Efficiency Obligation



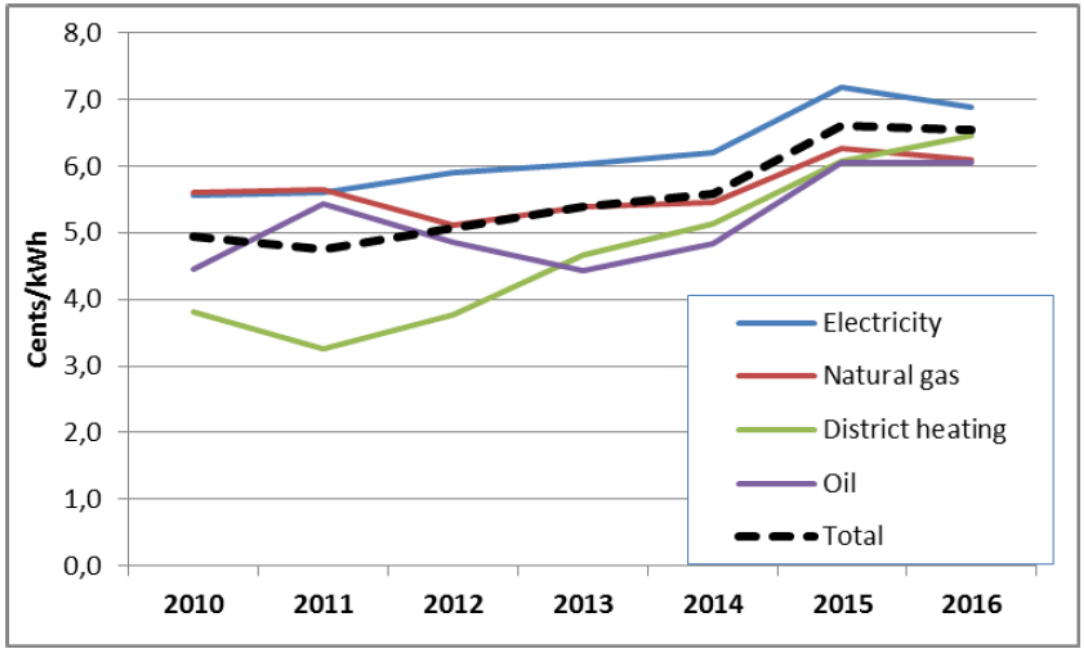
Danish EEOS—annual energy savings targets, 2005–2020

(expressed as first year savings)

- 2006–2009: 2.95 PJ of first-year savings to be achieved in each calendar year,
- 2010–2012: 6.1 PJ/year,
- 2013–2014: 10.7 PJ/year (corresponding to 2.6% of energy end use),
- 2015–2020: initially 12.2 PJ/year (corresponding to 3.0% of energy end use) but the policy agreement of December 2016 revised the annual targets to 10.1 PJ/year.



Costs of energy savings through EEO in Denmark

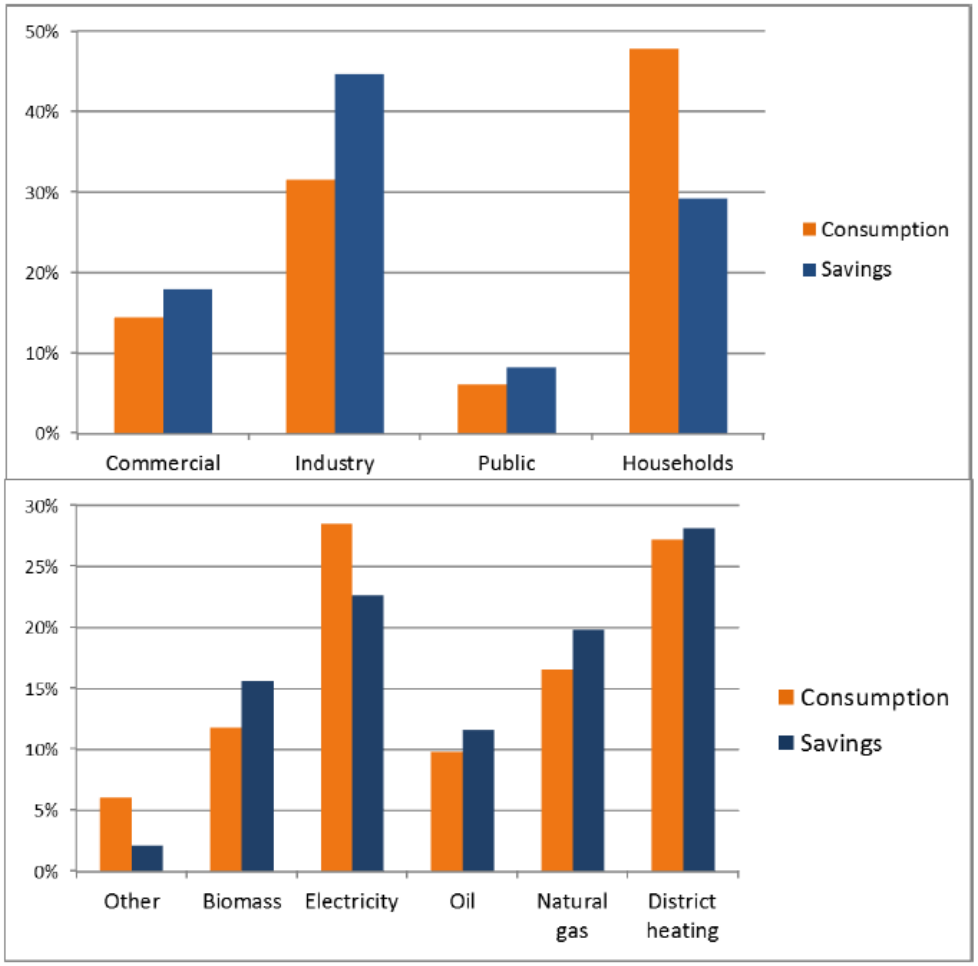


- 6-7 Eurocents per kWh first year savings
- 0,6-0,7 Eurocent per kWh with an life expectancy of 10 years

Distribution in sectors and fuels

Between sectors
- More in private firms
- More in public sector
- Less in household
- SME may be a problem

Between fuels
-Very good distribution
-More natural gas and biomass
-Less electricity



Danish EEO's success with industry

- Advice given directly by the obligated parties, advice given by consultants as a third party involved, and subsidies given per saved kWh.
- Savings in industry are considered attractive as they often provide significant savings in other projects and thus reduce administration costs.
- Furthermore, the 2012 evaluation shows that energy savings in industry under the EEO scheme are profitable, have a high net effect and can be considered a cost-effective measure
- The experience from Denmark is that when left to the discretion of the obligated parties the most cost-effective and dominating sector to realise savings is industry.
- For countries that are considering establishing an EEO, it is thus worth considering a design that allows and encourages savings in industry

Future of EEO Scheme in Denmark

- On 29 June 2018 the Danish government announced that the scheme will not be continued after 15 years of operation when it expires by the end of 2020
- Very few want to continue with EEO after this due to concerns about costs (low-hanging fruits have been picked)
- Denmark will continue to invest in energy efficiency measures through a grant fund in combination with an auctioning scheme.

Success factors of the EEO Scheme for indusry in Denmark

- Denmark has a history of energy audits and providing advice to customers by energy distribution companies dating back to the 1990s.
- The EEO could therefore pick up on existing methodologies for calculation of savings and standard reporting templates.
- The combination of setting mandatory targets for the industry at a far earlier stage than other countries and the innovative element of free choice of measures and the corresponding methodologies represents the major success factor of the EEO.
- The EEO activated those companies that have already had regular contact with their consumers.
- This resulted in very low overall costs and high acceptance among the population.
- The latter has also been enhanced by the municipal ownership of most network companies in Denmark.
- Administration costs are also low as documentation procedures are relatively simple and the associations of each sector compiles all necessary information at an aggregated level.
- Cost recovery is crucial to remove economic risks, which supports the choice of energy distribution companies to be the targeted party of the policy.

Recommendations to other countries for replicating the Danish experience

Factors that could be avoided:

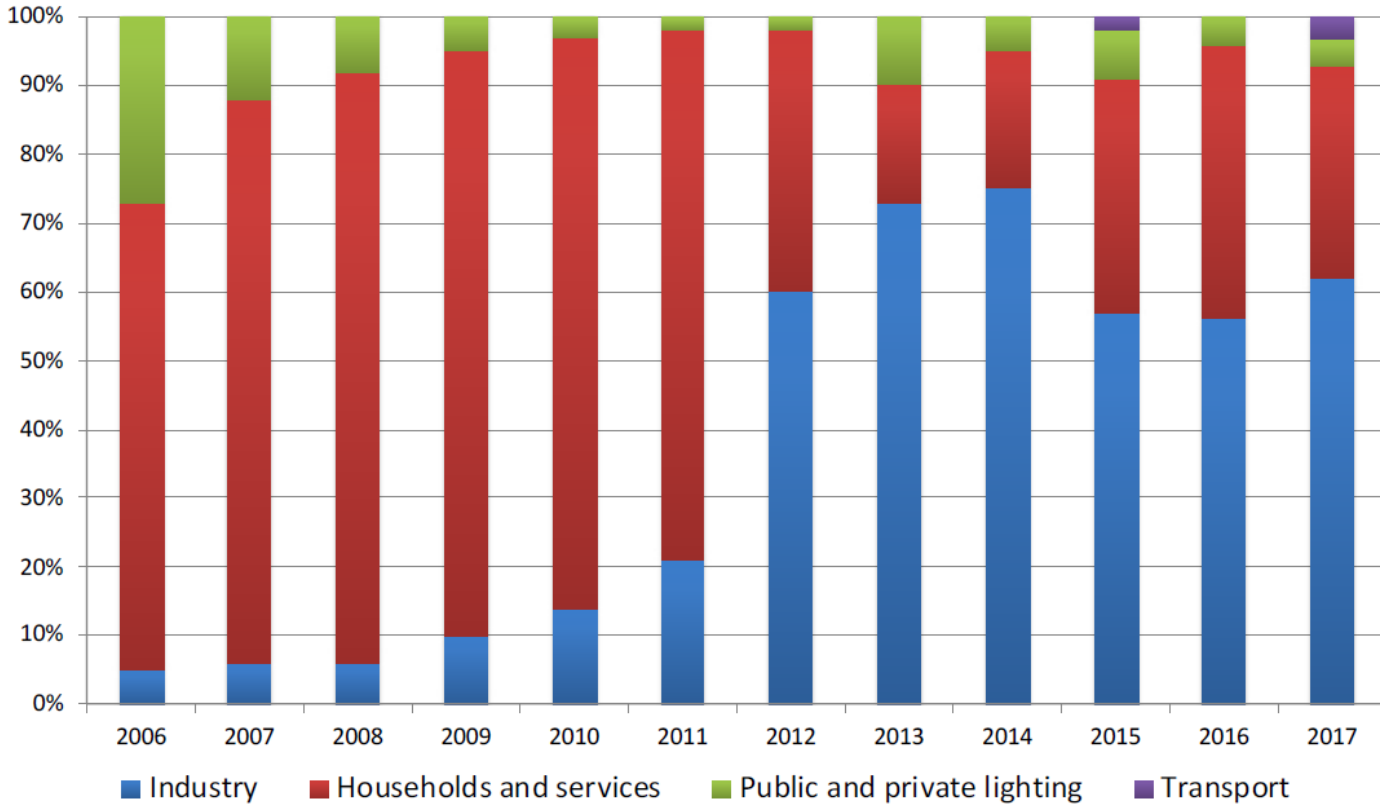
- Regarding types of measures, additionality is found to be lower if focusing solely on subsidies than if combining subsidies with advice.
- Saving potential that industry and consumers know of as feasible ("acknowledged potential") might be lost as projects are chosen that are known and no new knowledge is added.
- If a market based scheme is applied, profit needs to be allowed at the executing level as otherwise needed energy savings will not be delivered (ENSPOL 2015).

Possible further improvements of the current policy include mainly the integration of the above mentioned acknowledged potential.

- This requires incentives to be balanced in the future, e.g. by (re)implementing advice, energy audits and energy management.
- More rules for documentation that however are not too complex would help overcome flaws in the scheme.
- Minimising or accounting for free-riders through more explicit methodology could increase confidence in the claimed savings.
- Lastly, information on costs could be improved.

The Italian EEO/White Certificate Scheme

Breakdown of certificates among sectors (%)



(Source: FIRE on ARERA and GSE data; 2012 data refers only to Jan-May)

Italian EEO scheme - another success with in industry

The Italian EEO scheme, which started effectively in 2004, with targets increasing year over year (from 0.2 Mtoe in 2005 to 7.0 Mtoe in 2020);

- High flexibility, due to the possibility to have third parties implementing the energy efficiency project and for the obliged parties to use the market to supply of white certificates; besides, distributors are allowed to recover up to 40 % of each year target in the following year without incurring in fines;
- Shifts of Sectors over time; shift from a prevalent use of simplified procedures for the assessment of energy savings, to the industrial sector and a predominant use of metered savings procedures.

Reasons of the high shares of industrial sector:

- the higher convenience of industrial projects, usually characterised by shorter pay-back times than interventions in other sectors
- the larger dimension in terms of savings, which make it easier to reach the minimum project size admitted by the guidelines.

Concluding remarks

- An EEOS requires obligated parties, generally energy utilities, to meet energy saving targets by delivering or procuring energy savings at the customer end of the energy system.
- Individual EEOS look very different from each other in obligated entities, geographical scales, ambition levels, and sector coverage
- EEO Schemes have been implemented in very different market structures and policy mixes.
- There are estimated to be around 46 EEOS across the globe (IEA, 2017. Market-based instruments for energy efficiency).

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