



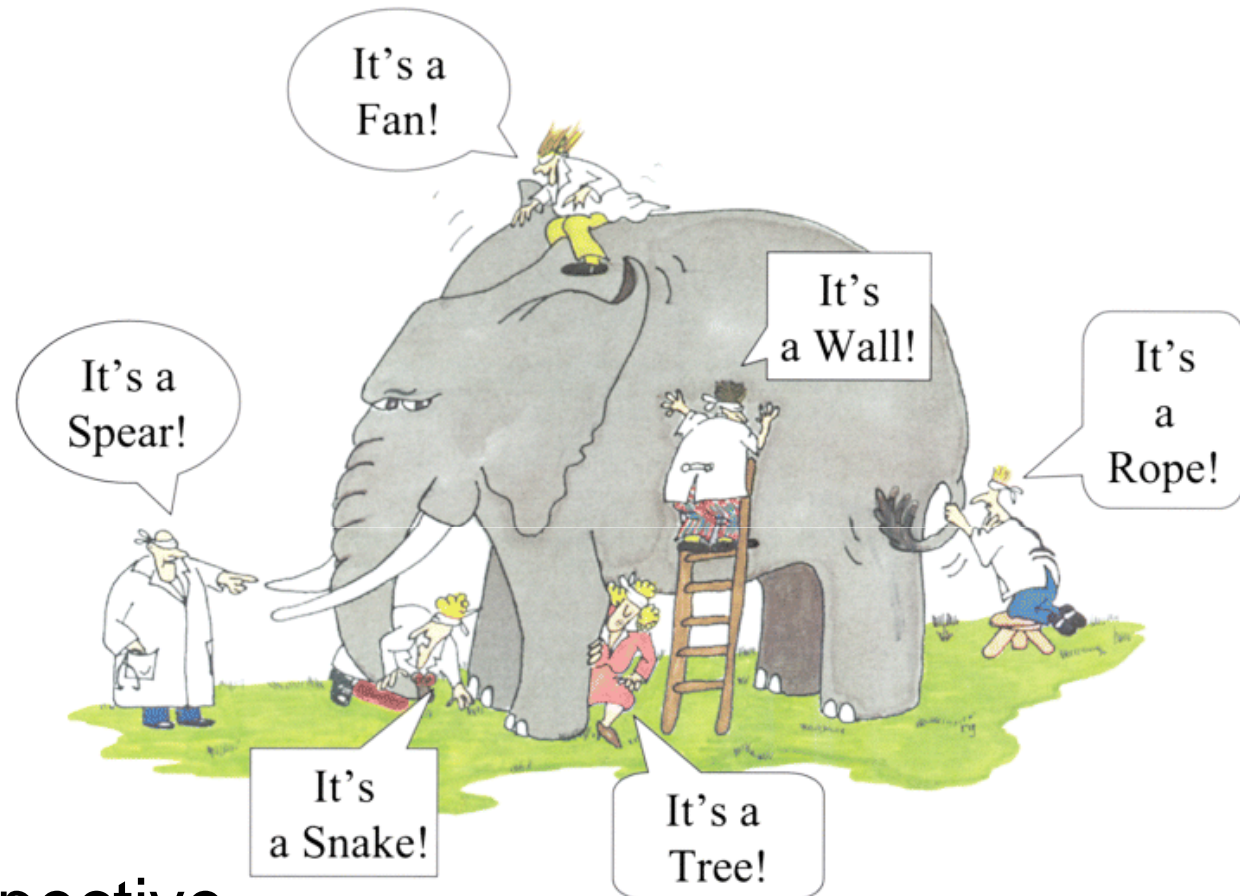
**Evaluation of Danish energy efficiency policies**  
**Keeping it simple**

**IEPEC 2010**  
**9-10 June, 2010**

Reflection  
is a pre-requisite to  
learning



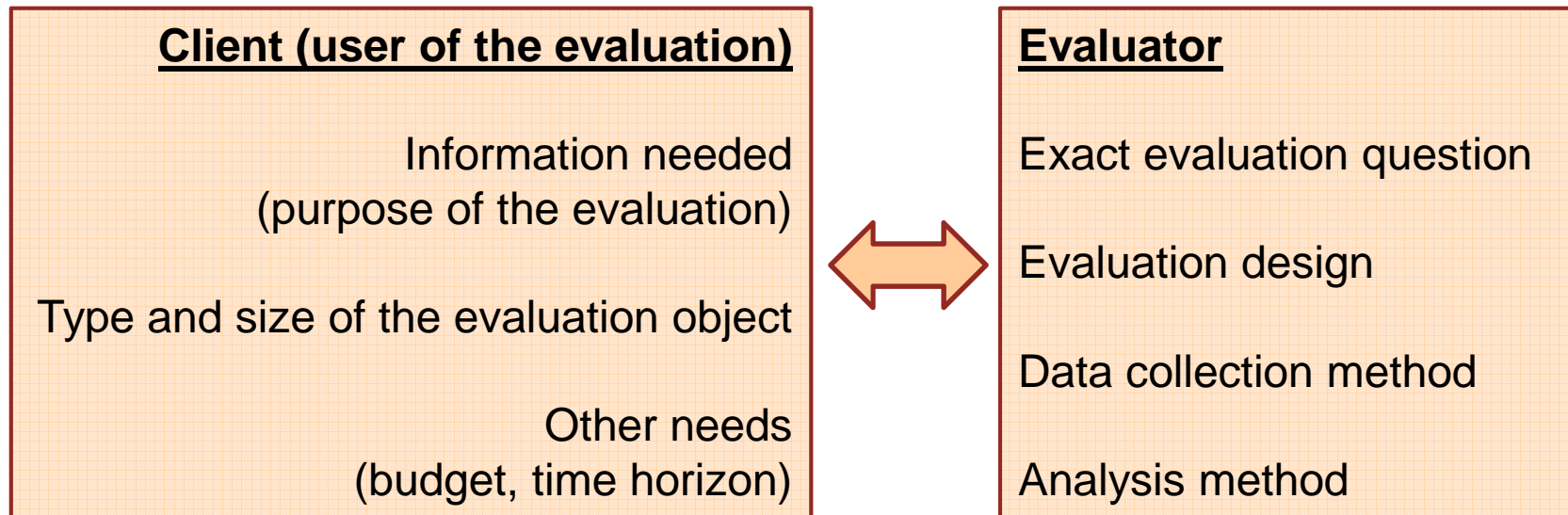
- **Triangulation**
  - Cross check, reality check



- **Portfolio perspective**
  - Synergies and overlap
- **Exact evaluation question**
  - Assessing impact versus outcome

# Is there balance?

Danish practical evaluation handbook 2002



# What information is needed?

Danish practical evaluation handbook 2002

- Comparison of **target** and **results**
  - Did you achieve what you wanted?
- Basis for **comparison** with other programmes
  - Should the programme be repeated, expanded or terminated?
- Expanding the **understanding** of the underlying theory so that more can be achieved with less effort
  - How does the programme work?
- **Inspiration** for improvement
  - E.g. exploring ideas from target groups and partners

# Example – Energy audits

Evaluated in 2004

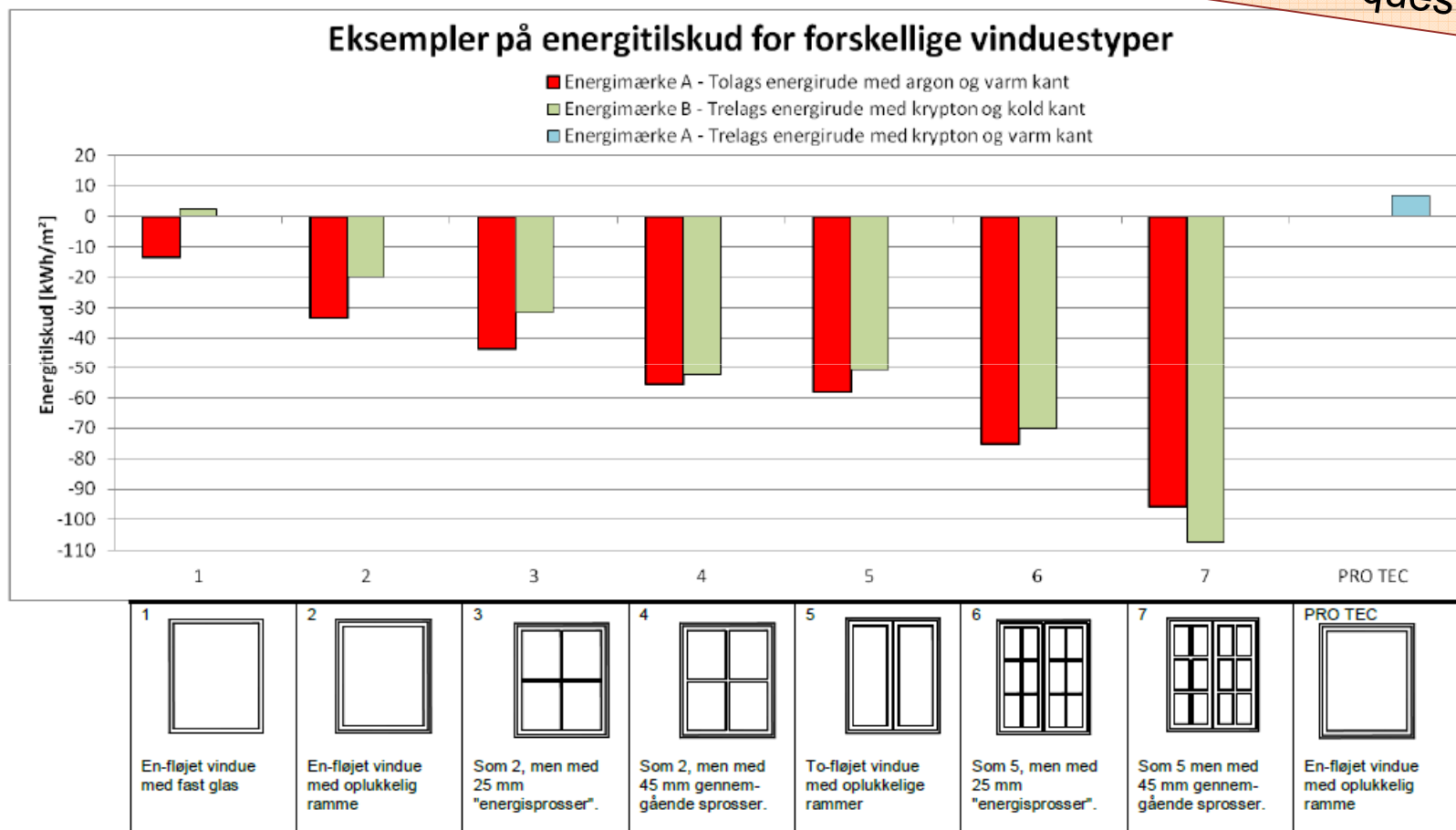
- Background evaluation (documentation review)
  - 40% of the number of advice given are realised
  - First year savings constitute 0,5% of the electricity consumption of all customers
  - Shadow price 16 EUR/ton CO<sub>2</sub> in 2002 (significant differences between industrial trades)
- Macro-level evaluation (econometric)
  - Non-conclusive
- Micro-level evaluation (case)
  - 64% of the number of advice given are realised
  - First year savings constitute 7-20% of the individual company's electricity consumption
  - Shadow price below 16 EUR/ton CO<sub>2</sub> in 4 of 8 cases

Triangulation

# Example – Voluntary window labelling

Evaluated in 2007

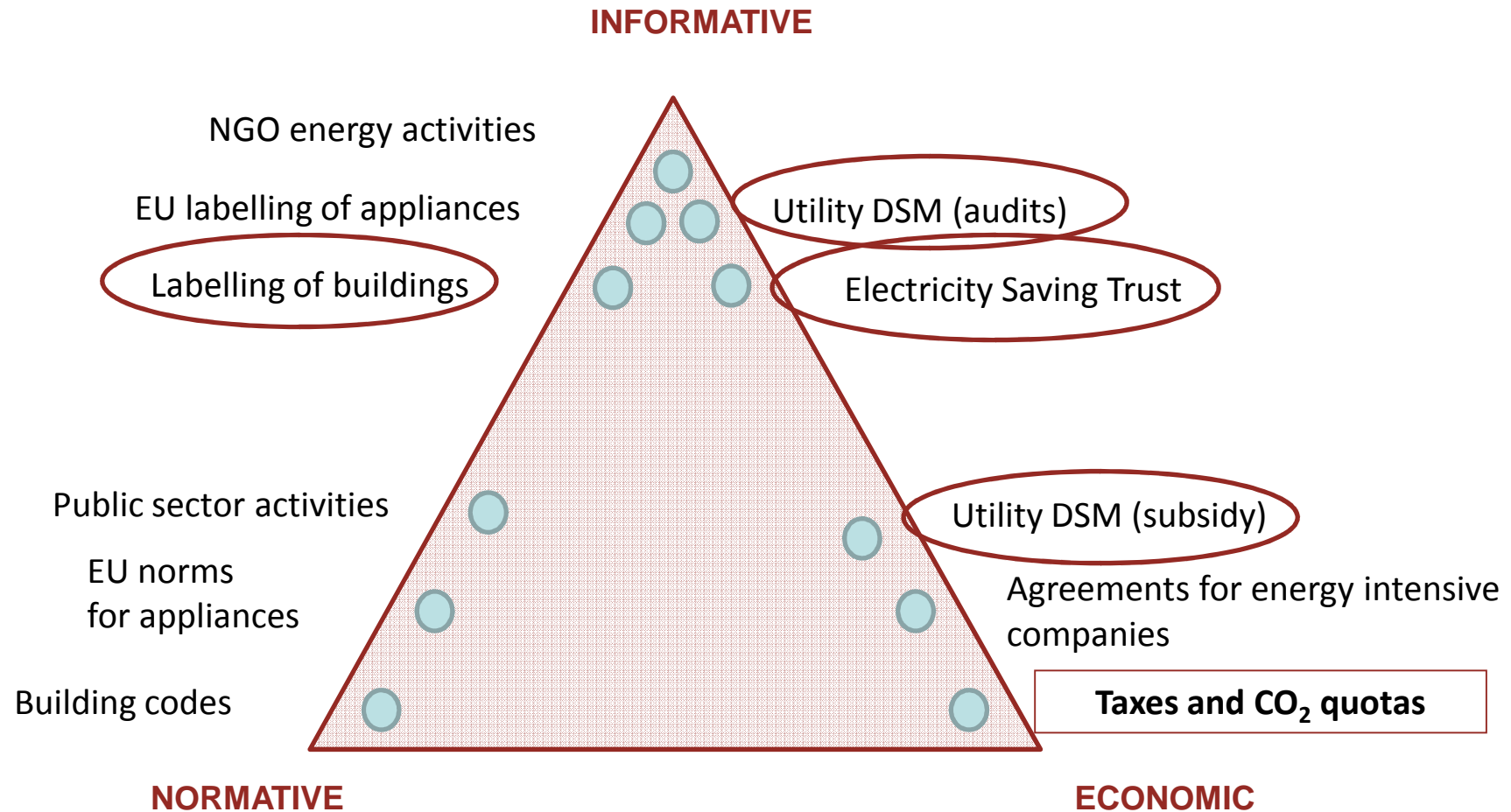
Exact evaluation question



Vinduernes data er hentet fra vindueseeksempel 2 og 5 fra <http://www.ebst.dk/br08.dk/eksempelintro/0/94/0>  
 Energitilskud beregnet for standardstørrelsen 1230 x 1480 mm

# Example – Danish EE portfolio 2008

Object of the evaluation





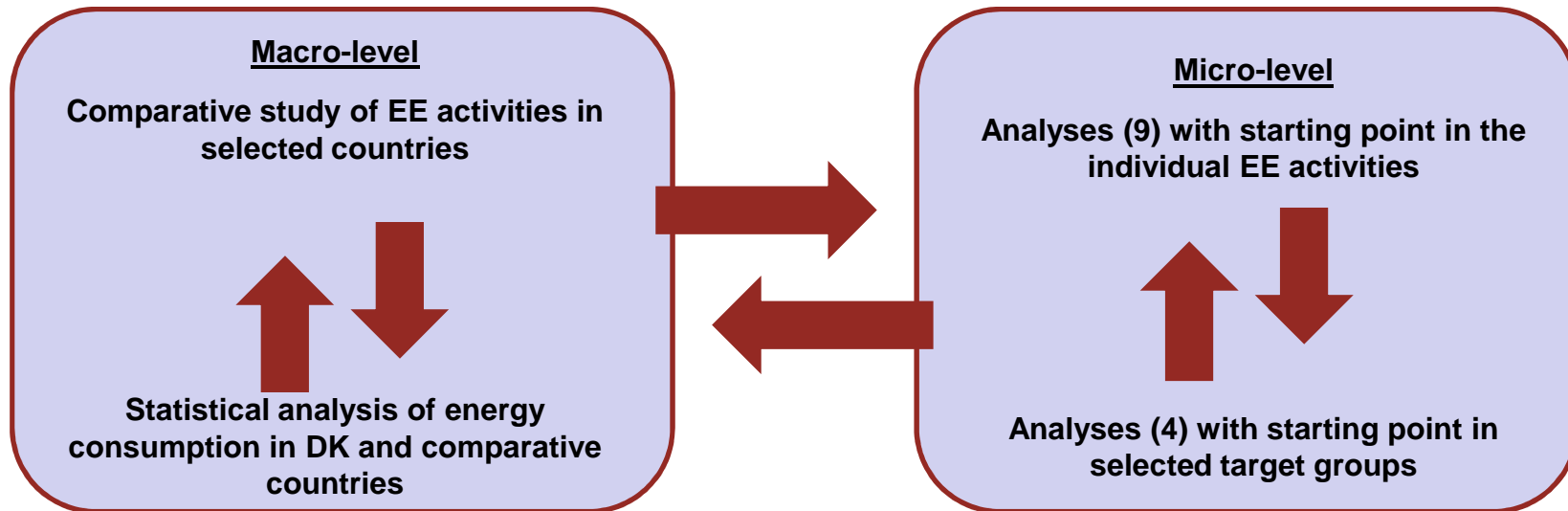
# Aim and organisational set-up

## Danish EE portfolio

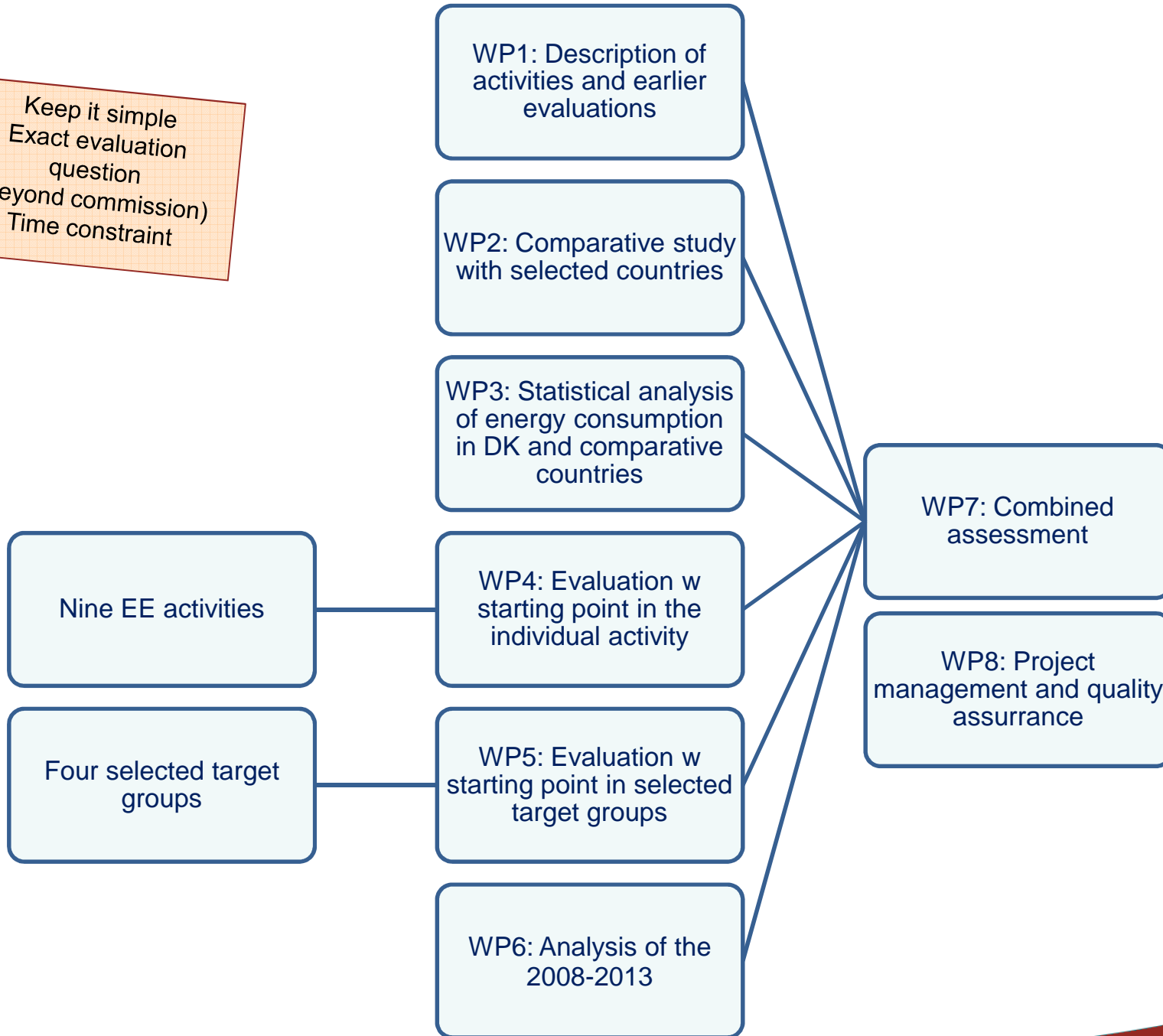
- Aim
  - Will targets be met?
  - Net impact
  - Net private and socio-economic costs
  - Recommendations for efficiency and organisational improvements
- Set-up
  - Independent evaluation
    - EA, NIRAS, Roskilde University, 4-fact
    - May-December 2008
  - Political acceptance
    - Independent expert steering group
      - Economics, evaluation theory, international energy efficiency policies
    - Continuous stakeholder dialogue
- Application – A step towards a major revisions

# Evaluation design

Danish EE portfolio



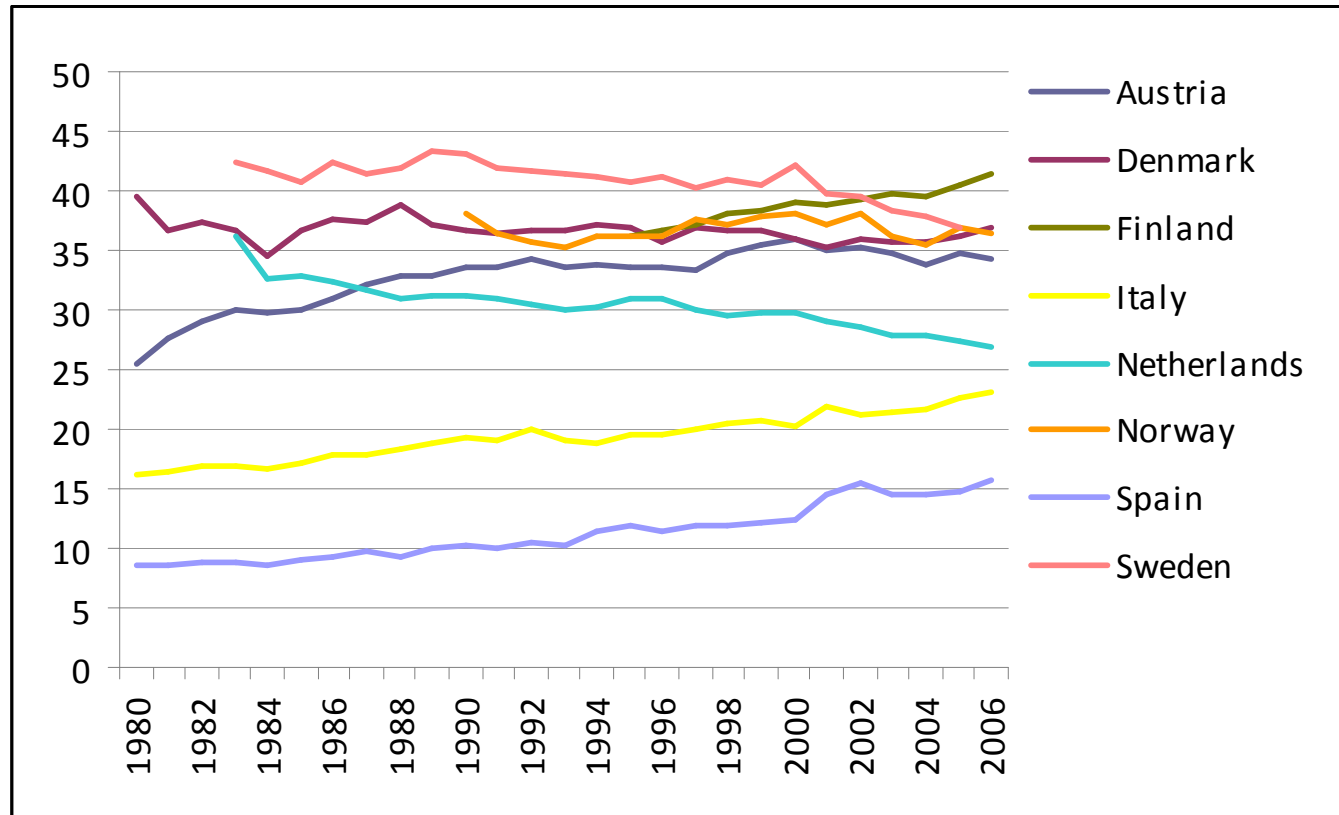
Keep it simple  
Exact evaluation  
question  
(beyond commission)  
Time constraint



# Net impact relative to targets

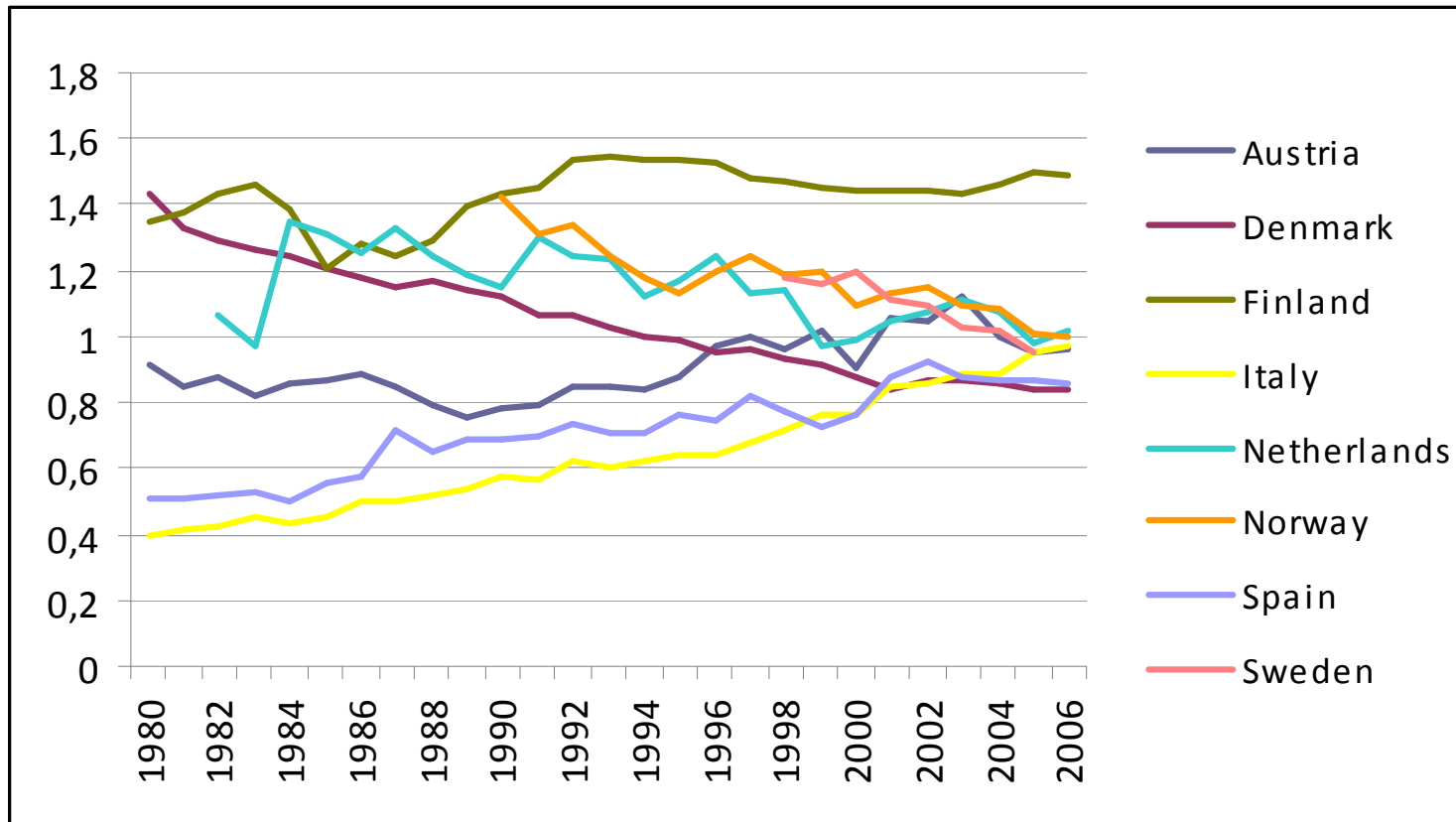
First year savings (PJ)	Target	Evaluation	Basis
Energy companies	2,95	1,50	Empirical
Electricity Saving Trust	0,60	0,30	Estimate
Labelling of buildings	0,50	0,02	Empirical
<b>Sum</b>	<b>4,05</b>	<b>1,82</b>	
Lacking		2,23	
<b>Other</b>	<b>3,45</b>		
<b>Sum in total</b>	<b>7,5</b>		

# Macro level triangulation of impact



- Household sector energy consumption per capita (GJ/capita) – climate corrected.
- Source: ODYSSEE database

# Macro level triangulation of impact



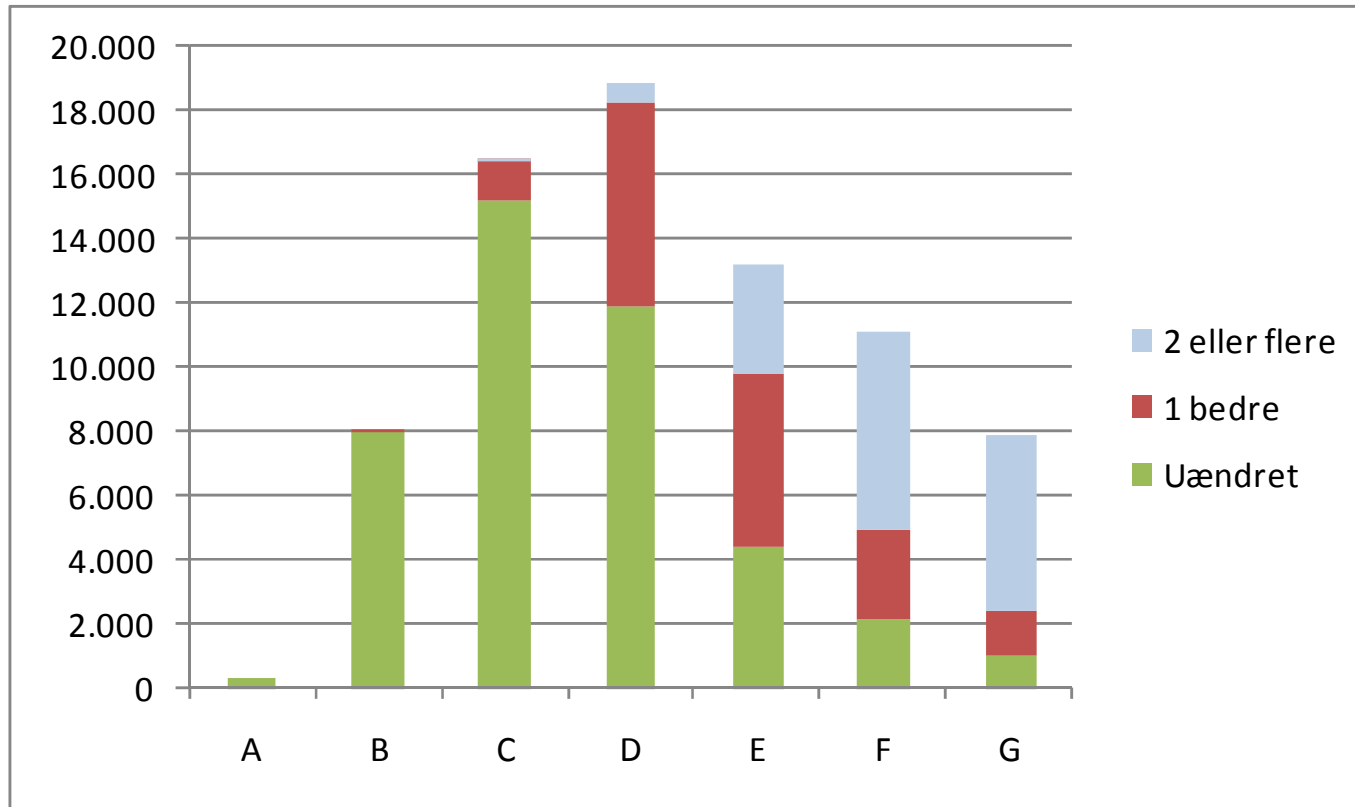
- Service sector energy intensity (MJ/EUR200 prices) – climate corrected.
- Source: ODYSSEE database

# Micro level triangulation of additionality

- Energy company obligation
  - Interviews among energy company staff
    - Worry
  - Standard value catalogue
    - Considers only to some extent additionality
  - Survey among 105 businesses with largest reported savings
    - 50% additionality
- Building labelling
  - Parallel evaluation based on energy bills
    - No effect in natural gas fires households
  - Interviews with “best case” households with energy label
    - 33% have implemented some of the recommendations
    - ... Of which 60% not additional

# Outcome versus impact focus

## Building labelling



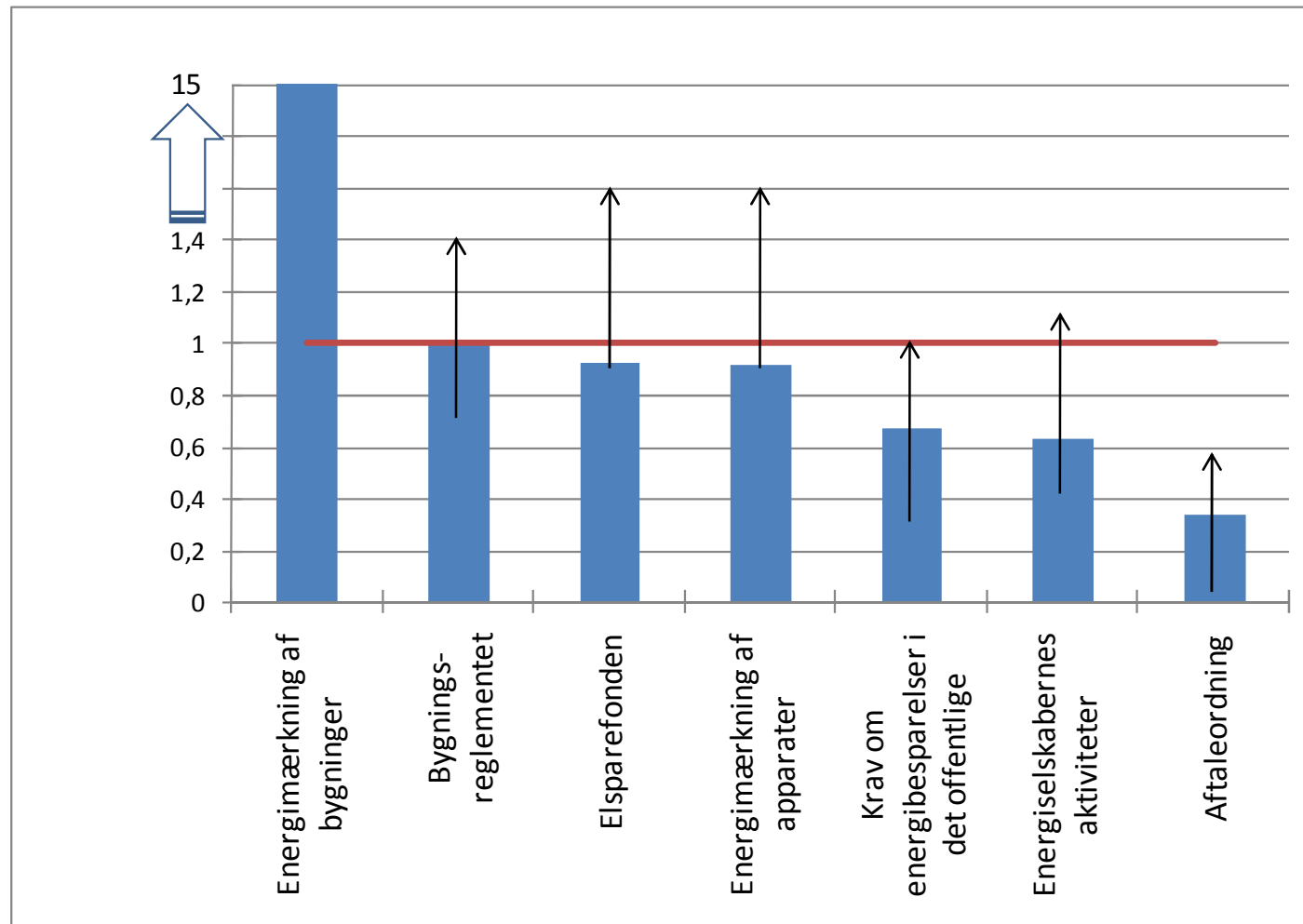
- Degree of compliance – 3% large buildings, 20% new, 50% existing
- 43% of labels indicate possibilities leading to 1 or more steps up



# “Visual” portfolio assessment

	Households	Public sector	Trade and industry	Energy intensive industry
CO <sub>2</sub> -quotas	x	x	x	<b>X</b>
Taxes	<b>X</b>	<b>X</b>	x	x
Energy utilities obligation	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Building codes	<b>X</b>	X		
Electricity Saving Trust	<b>X</b>	<b>X</b>		
Labelling, buildings	<b>X</b>	X		
Labelling, appliances	<b>X</b>	X		
NGO activities	<b>X</b>			
EE in the public sector		<b>X</b>		

# Economic portfolio assessment



1 = Socio-economic costs

# There is a lot to be learned

- Keep it simple – Consider the application of the evaluation results
  - Triangulation lends credibility
  - A holistic portfolio approach can reveal synergies and overlaps
  - Think beyond the narrow evaluation commission
    - What are the results going to be used for?
- Balance is at times beyond evaluator's control

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**THANK YOU**



# Ea Energy Analyses

- Consultancy and research
  - Energy system and policy analyses – technically, economically, environmentally – including all technical and regulatory elements on both supply and demand side
  - Specialized in developing energy scenarios and system modelling, in particular incorporation of large amounts of renewable energy and transition to an intelligent energy system
  - Primary customers include regulatory authorities, municipalities, energy companies, and trade organisations in Denmark and internationally
- Founded in 2005, 32 professionals/employees