

---

# White Certificates

## - What can Denmark learn from other countries?

Stockholm, 28 November 2007

Kirsten Dyhr-Mikkelsen

Ea Energianalyse A/S

# What can Denmark learn from others?

---

- Task for the Danish Energy Authority:
  - Foreign experiences – Italy, France, United Kingdom and others
  - What qualities in the existing Danish system should be maintained? How should a Danish system for white certificates be formed if it were to be established?

# Energy savings are overlooked

---

- Barriers to end-use energy efficiency
  - Price
    - Many small projects with each its start up costs
    - The supply of energy savings services is limited
  - Drive
    - Typically long way from will to action among consumers
    - The focus of the consumers is primarily on investment costs
- Wishes
  - Price
    - Exploitation of the possibilities for “economies of scale” (lower price per savings)
    - Larger supply of energy savings services and greater price competition
  - Drive
    - Strongly motivated initiator
    - Actor with focus on economic profitability (=recognition of value)

# Other political agendas

---

- IT
  - Greater security of supply (large import from France, blackouts in 2003)
- UK
  - Alleviation of fuel poverty
  - Increased living standards (better health)
- FR
  - Smoother transition for the consumers to market prices for energy

# The concept in brief

---

- Main argument for WC
  - Can create initiative and economic efficiency
- Concept
  - An authority places an obligation on someone to realise a certain amount of energy savings
  - A procedure which defines "a unit of energy savings"
  - A procedure for covering costs

# Alternatives to WC

---

- Taxation of energy consumption (levy)
  - Pro – Discourages consumption (and creates means for savings), no free-riders
  - Contra – Competitiveness of Danish companies is deteriorated, limited initiative, politically sensitive redistribution issue
- Creation of an energy savings fund
  - Pro – Variation in applications' profile and innovation possible
  - Contra – Central selection and control, limited initiative
- Individual quotas for energy consumption (similar to placing WC obligation on consumers)
  - Pro – Baseline estimates are unnecessary
  - Contra – Determination of consumption levels

# Other countries

---

- The Netherlands
  - Voluntary agreement with the energy companies – 30% savings in 200.00-300.000 households per year – argument: fewer free-riders and lower transaction costs
  - Aims to save 100 PJ (=28 TWh) in the period 2008-2020
- Poland
  - Introducing WC system – also savings in the energy supply system are allowed – argument: low public budgets

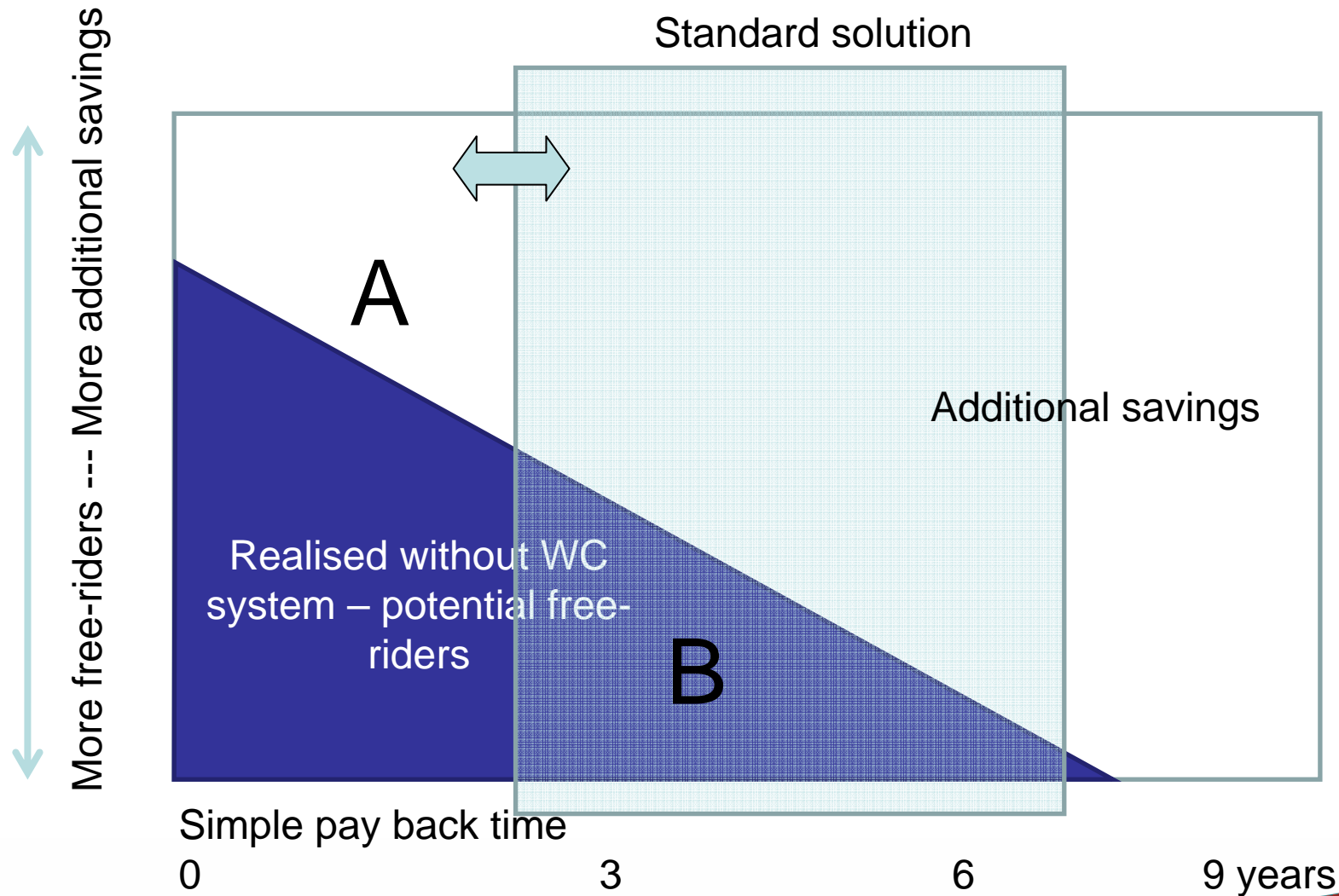
# The parameters of the WC system

---

- Obligation (market size, energy type) and obliged parties (primary actors)
- Secondary actors with permission to trade
- Transaction costs, price setting (market place), financing (administration of system) and penalties
- Solutions (standard, customer specific) and consumer segments
- Approval of WC – including placement of risk – and verification
- Evaluation and adjustment
- Interaction with other mechanisms



# Minimising free-riders



## Formation d'un chauffeur de transport public routier à la conduite économique

### 1. Secteur d'application

Transport public routier de voyageurs (autobus et autocars de ligne).

### 2. Dénomination

Formation d'un chauffeur à la conduite économique lors d'une campagne menée sur un ou plusieurs réseaux de transports publics urbains ou interurbains.

### 3. Conditions pour la délivrance de certificats

La formation initiale, réalisée par une entreprise ou un organisme agréé, doit comporter :

- une partie théorique portant sur le fonctionnement du moteur et les principes de la conduite économique (anticipation, juste sollicitation de la mécanique) ;
- une partie pratique sur véhicule.

Les sessions de rappel doivent comporter la partie pratique, mais leur partie théorique pourra être allégée.

### 4. Durée de vie conventionnelle

1 an.

### 5. Montant des certificats en kWh cumac

Type de véhicule	Montant annuel en kWh cumac
Urbain (autobus)	3 000
Interurbain (autocar)	4 200

Example of  
French  
standard  
solution

# Standard CFL solution

CFL	1st year savings (kWh/year)	Life time savings (kWh)
FR	(33)	230
IT	66	330
UK	10	208
DK	18-77	(144-616)
Assumptions		
FR	4% discount rate, 7.5 years' life time	
IT	5 years' life time	
UK	3.5% discount rate, 16 years' life time. Corrected for heat displacement	
DK	5 sizes, 1,000 h/year, 8 years' life time	

# Our main conclusions

---

- Advanced form of economic support in some form or other – free-rider issue
- Standard solutions dominate – Simple to administrate but imprecise
  - Apparently very attractive solutions can get all attention – In Italy CFLs
- It is possible to make the price visible
- Only a real exchange for WC in Italy (1/3 of total is traded there)
- It is not documented that a WC system is a more cost-effective mechanism than the alternatives
- WC system is not used alone but in conjunction with other mechanisms
- The systems are very national specific – Common EU system not realistic
- Savings in households dominate so far – greater cost-effectiveness in other segments?

# Danish savings targets

---

- Energy savings action plan
  - Globalisation, growth and business development (competitive framework)
  - Security of supply (reduced reliance on fossil fuels)
  - Protection of the environment (in particular CO<sub>2</sub>)
- Political agreement 10 June 2005
- Cost effectiveness and market oriented
- 7.5 PJ/year in 2006-2013 (=1.7% of end-use)
  - Now 2008-2013, 9.6 PJ/year
- No increase in economic framework
- Requirements
  - Network companies must prioritise savings in heating
    - Information on financing possibilities
  - Balanced effort in relation to consumer groups, end-uses and geographical area

# Danish obligation

---

- Primary agents
  - District heat, natural gas, electricity network companies and oil companies (oil has voluntary target)
  - Obligation is based on market share (el 1.4, gas 0.5, oil 0.15, DH 0.9 PJ/year end use consumption) – increases from 3 PJ/year to 5.4 PJ/year from 2010 (additional 400-450 mill. DKK)
  - Max 35% lag a given year as of 2008
  - Free choice of energy type and area

# Danish solutions

---

- All sectors except transport
  - End-use measures
  - Local technologies (solar heating, solar cells, heat pumps)
  - End consumer initiatives that bring savings in supply system (flexible el consumption, cooling of DH water)
- El correction factor 2.5
- Involvement requirement (additionality issue)
- 1st year savings only (however, short lived measures like annual boiler check take short life time into account in standard value)
- Types
  - Customer specific solutions
  - Standard solutions
  - Market and behaviour initiatives

# Danish documentation requirements

---

- Storage for 5 years
- Joint documentation
  - Every half year TJ measure type per sector and energy type
  - Annually specific and standard solutions by end-use and sector
- Specific solutions
  - What measure and savings
  - Calculation method
  - Customer id
  - Implementer
- Standard values (installations and sales)
  - What measure
  - No. of installations/sales
  - Customer id
  - Implementer
  - Calculation if market and behaviour – description, baseline according to guide, no. realised
- Market and behaviour influence (no direct customer contact)
  - Only accepted if independent impact of reasonable duration
  - Guide for calculation



# Danish verification and evaluation

---

- Annual samples – occasionally by independent evaluator
- If deemed necessary, cross cutting control by DEA to assess double counting
- Technical work group annually ...
  - Adjustment of guides
  - Establish and update standard values (forward)
  - Adjustment of documentation guidelines
  - Adjustment if relevant of rules for minimising double counting
- Evaluation of system ready end 2008
  - Methods
  - Impact of freedom of method
  - End-user satisfaction
  - Organisation
  - Relation to other mechanisms

# To avoid double counting

---

- **Between obliged parties**
  - Specific and standard
    - Agreements, procedures, samples
  - Long term initiatives
    - Time limited agreement with customer reg. ownership
  - Market and behaviour initiatives
    - Agreements and prior guidelines and distribution key
- **With outsourced initiatives**
  - Agreements and prior guidelines and distribution key
- **Authority initiatives and obliged**
  - Full credit, authority will reduce its figures
- **EST and obliged**
  - Agreement on guidelines and distribution key

# Danish energy savings

2006 and Q1-Q2 2007	Businesses	Households	Public sector	Total
(Electric) appliances	3%	2%	0%	5%
Lighting	4%	0%	4%	8%
Boilers, heat and ventilation systems	28%	9%	4%	42%
Building envelope (excl. windows)	1%	0%	0%	1%
Process energy	29%	0%	1%	30%
Pressurised air	4%	0%	0%	4%
Windows	0%	0%	0%	0%
Other	7%	1%	2%	10%
<b>Total</b>	<b>77%</b>	<b>11%</b>	<b>12%</b>	<b>100%</b>

In total 444 GWh

# ... put slightly differently

---

Reported for 2006 and Q1-Q2 2007

MWh	EI	DH	Gas	Oil	Total	Sum
11 largest companies	174.391	31.924	106.631	43.501	356.447	77%
40 other companies	78.386	3.852	13.653	8.002	103.893	23%
Total	252.777	35.776	120.284	51.503	<b>460.340</b>	100%
	55%	8%	26%	11%	100%	

# Danish trade

---

- No formal trade
- However, contact between the end-users and energy companies and advisors will as of December 2007 be facilitated through a website hosted by Dansk Energi
- End-users may describe assistance wanted
- Energy companies and advisors may describe offers of assistance
  
- [www.energisparemarkedet.dk](http://www.energisparemarkedet.dk)

# Our recommendations

---

- All consumer segments should be included – also transport
- The obligation should be placed on sales companies since their customers have the choice to leave
- Access for all to trade => increased competition with regard to price and ideas
- Open trading place (not necessarily an exchange) and price statistics => self control / control by competitors
- Standard solutions for all segments and thereby less distortion
- No discounting of savings, since the amount of CO<sub>2</sub> emitted does not have lesser value in the future
- Varied weighting of the different energy types so that CO<sub>2</sub> content is considered (district heating)
- 2-3 average life times of certificates/measures (1, 5, 8)
- Encourage innovation
- Ex-ante approval of WC
- Prepare adjustments and evaluations right from start

---

For more information:  
[www.ea-energianalyse.dk](http://www.ea-energianalyse.dk)

