

Review of European climate & energy policies & measures reflecting the UNFCCC and the Kyoto Protocol



Salzburg
3 September 2009

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EU Climate & Energy Policy

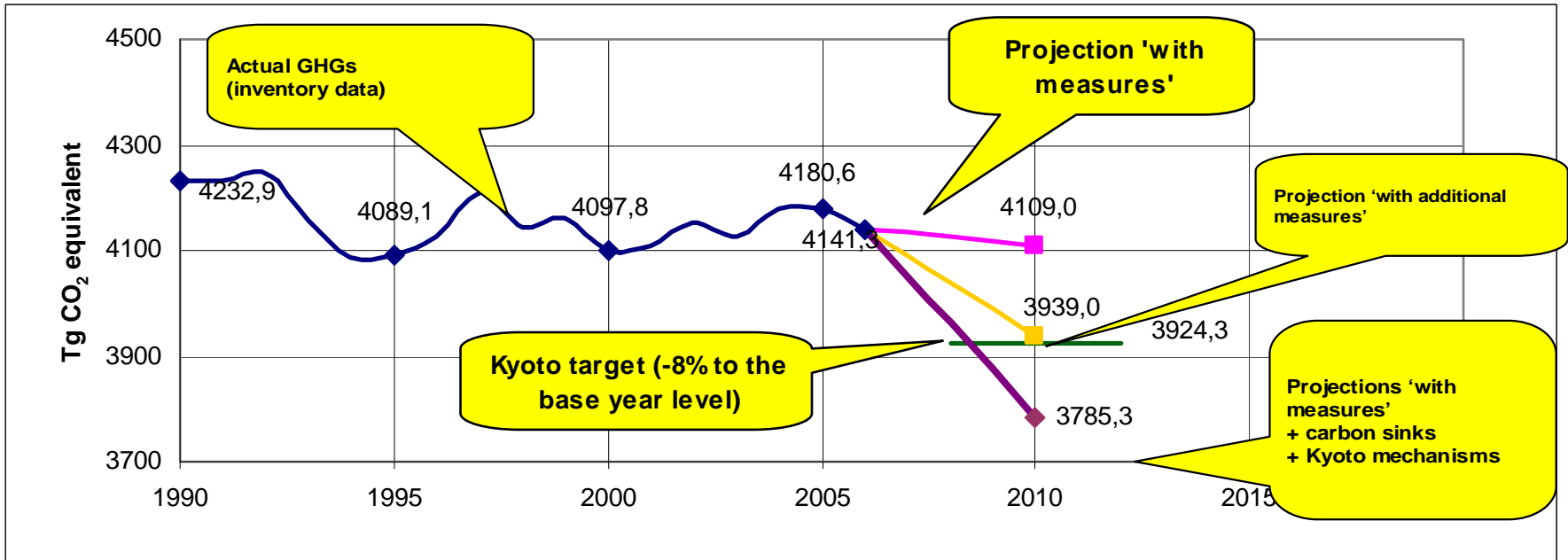
- No energy chapter in the EU Treaties
- Environment integrated gradually since 1979...
- National energy policy efforts after energy crises 1973/74 & 1979/80
- EC SAVE Directive 1991
- EC Party Signature UNFCCC 1992
- CCPM Kyoto preparations 1996
- European Climate Change Programme ECCP after 1997
- EU 2020 package 2006-2008 = real strategy!

European Policies & Measures I

- Overall
 - Integrated Climate Programme ECCP
 - ETS for large emitters phased
 - National efforts in non-ETS sectors
- Supply side
 - Energy market restructuring
 - RES electricity directive 2001
 - RES directive with 20 % targets 2008
 - CHP directive 2004
- Interacion national & EU?

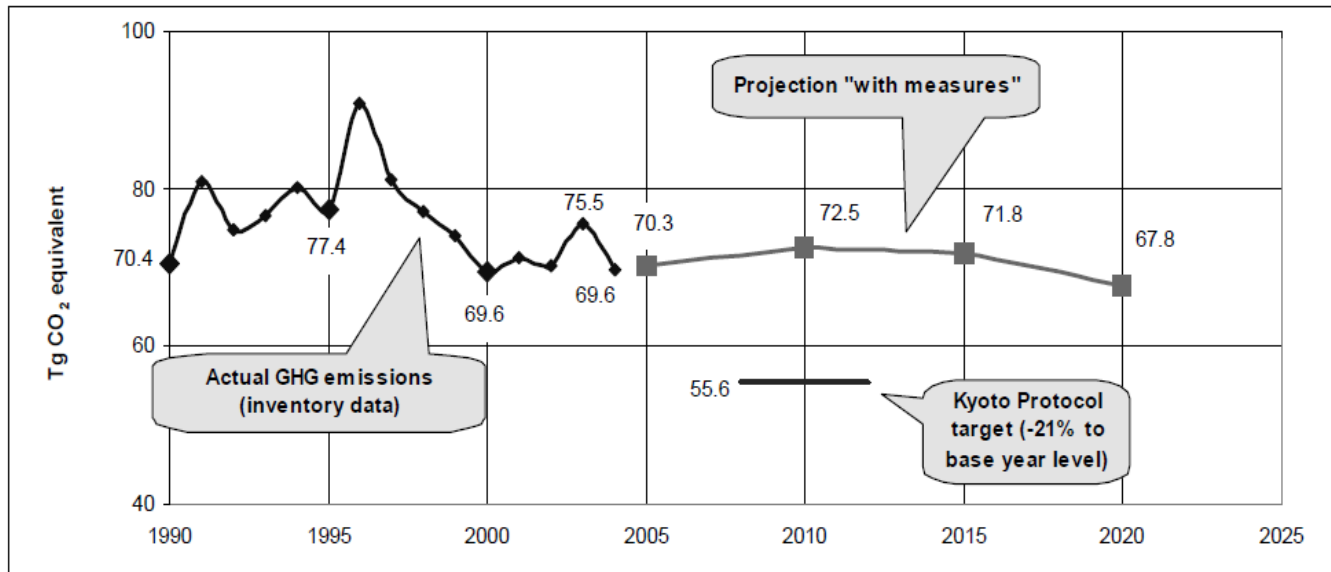
European Policies & Measures II

- Energy Efficiency
 - EU Action plan 'Doing more with Less'
 - Energy Service Directive 2005
 - Eco Design
 - Building Performance EPBD
 - Motor Challenge
 - European Investment Bank financing scheme for RES & EE investments
- Transport
 - Biofuels
 - Km per fuel directives/agreement
 - aviation
- R&D and SET Plan
- Etc.
- Interaction national & EU?



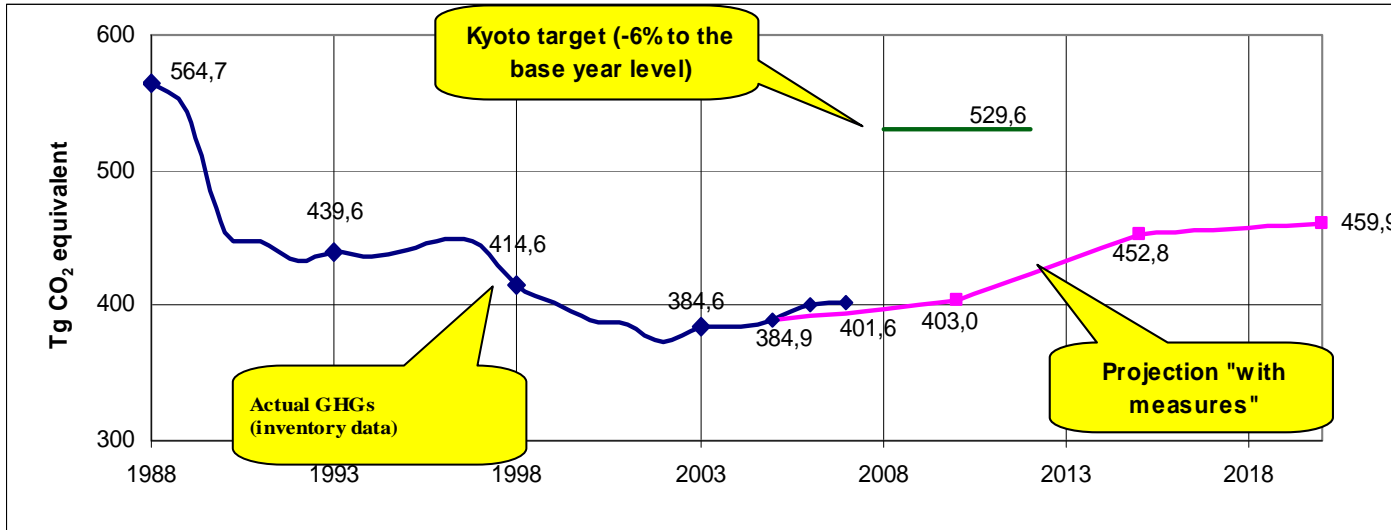
Greenhouse gas emission projections European Community

Figure 1. Greenhouse gas emission projections for Denmark



Source: Denmark's NC4; the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections Denmark

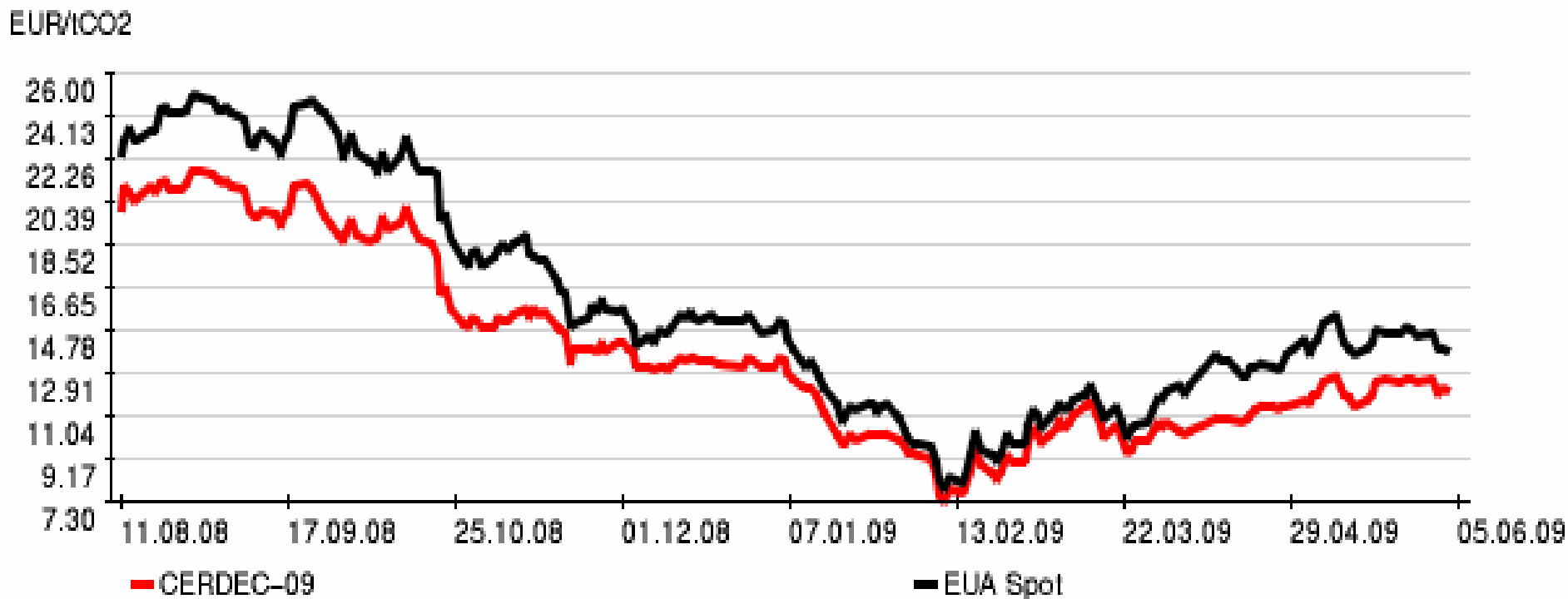


Greenhouse gas emission projections Poland

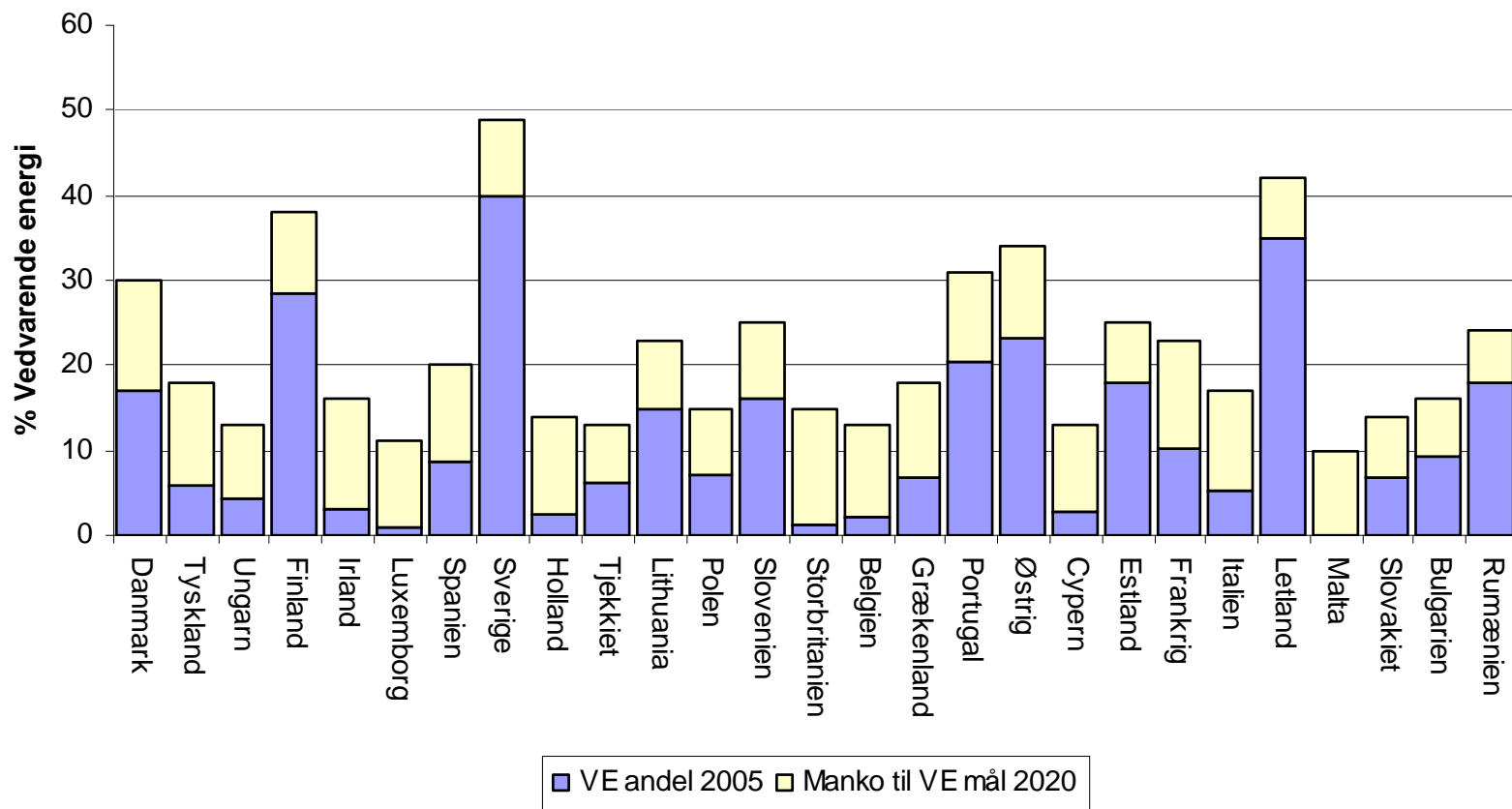
Conclusions re European Community

- EC has adopted UNFCCC & Kyoto commitment
- EC has significantly improved basis for strategy (2020...)
- Clarify role of 'old' EU15 and newer member states
- Energy intensity is improving all over EU
- Organisation of EU institutions could be more targeted to strategy
- ETS interesting, open for supervision

Price of Emissions 2008-2009 today around 15 € per ton CO₂



Burden sharing RES

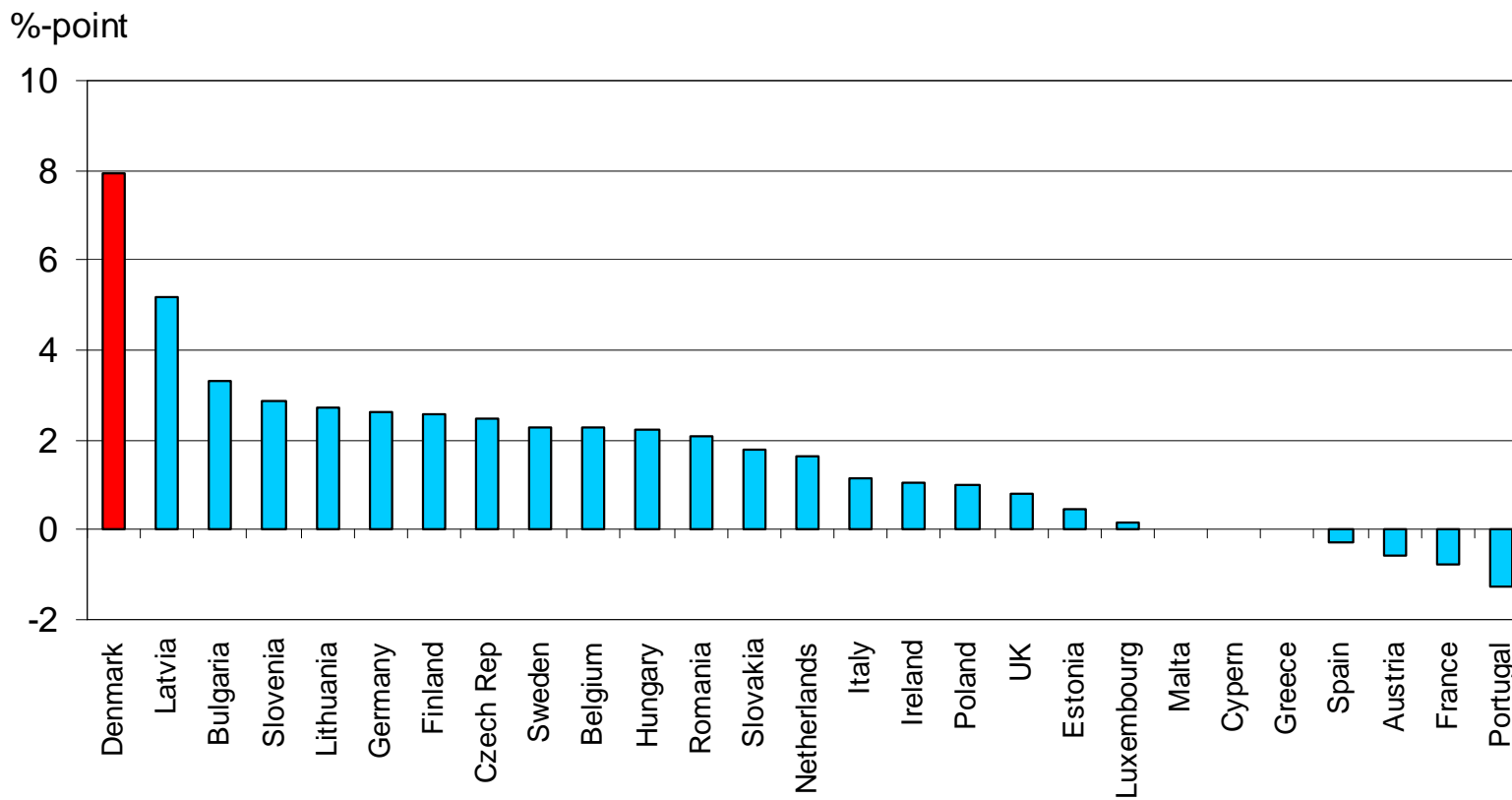


Renewable Energy Progress Report 2009

		AT	BE	BU	CY	CE	DK	EE	FI	FR	DE	GR	HU	IE	IT
Electricity	2004-2006 growth	😊	😊	😊	😞	😊	😞	😊	😞	😊	😊	😊	😊	😊	😊
	progress towards target	😞	😊	😞	😞	😞	😊	😞	😞	😞	😊	😞	😊	😊	😊
Transport (biofuels)	2005-2007 growth	😊	😊	😊	😞	😊	😊	😊	😊	😊	😊	😊	😊	😊	😞
	progress towards target	😊	😞	😊	😞	😞	😞	😞	😞	😊	😊	😞	😞	😞	😞
		LV	LT	LH	MT	NL	PO	PT	RO	SK	SI	RS	SW	UK	EU
Electricity	2004-2006 growth	😞	😊	😊	😞	😊	😊	😊	😞	😊	😞	😊	😊	😊	😊
	progress towards target	😞	😞	😊	😞	😊	😞	😞	😞	😞	😞	😞	😊	😞	😊
Transport (biofuels)	2005-2007 growth	😞	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
	progress towards target	😞	😊	😊	😊	😊	😞	😊	😞	😊	😞	😞	😊	😞	😊

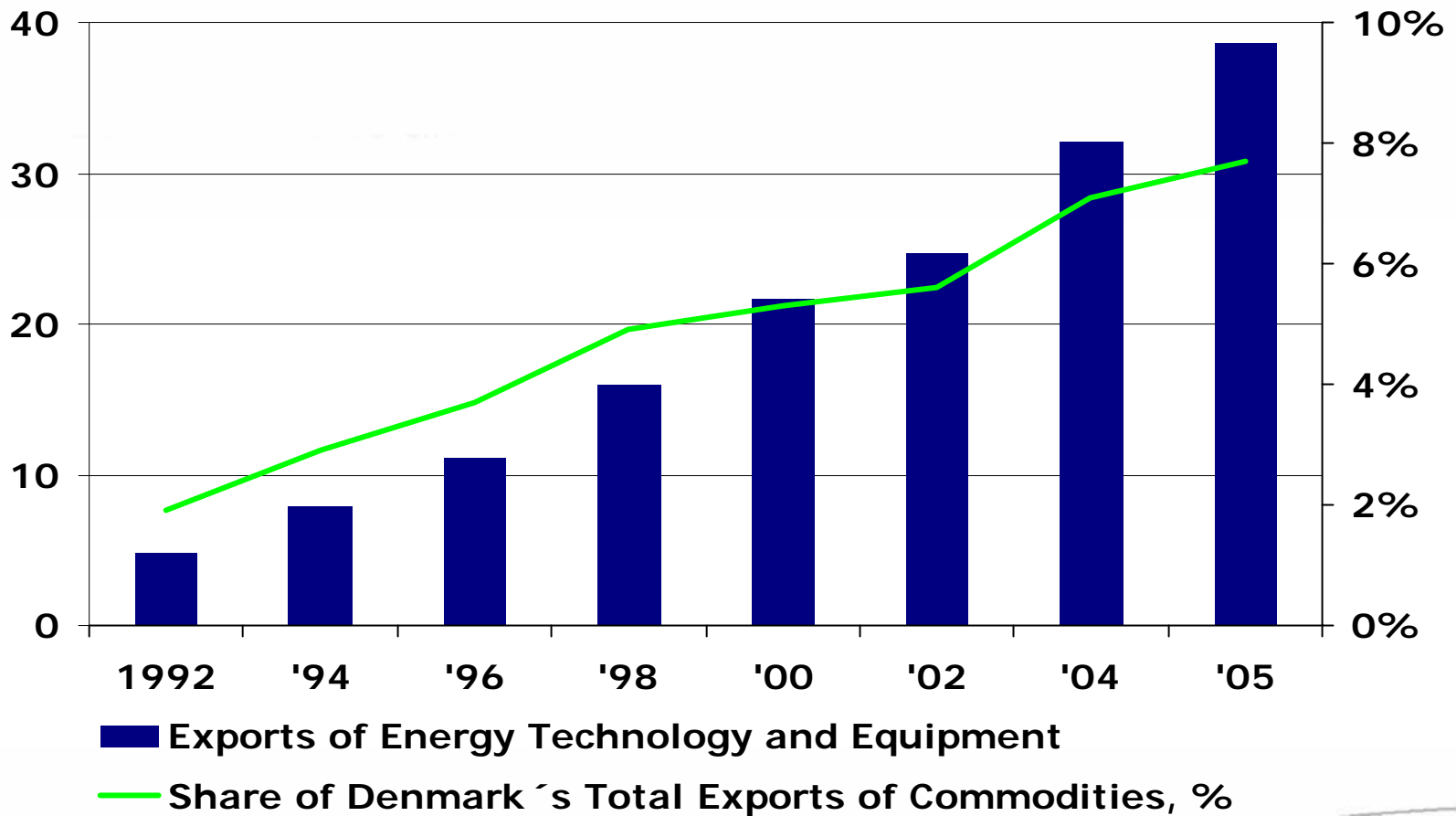
The development of RES inside EU

Development in the share of RES in EU Member States 1997-2005
(% of gross energy demand)



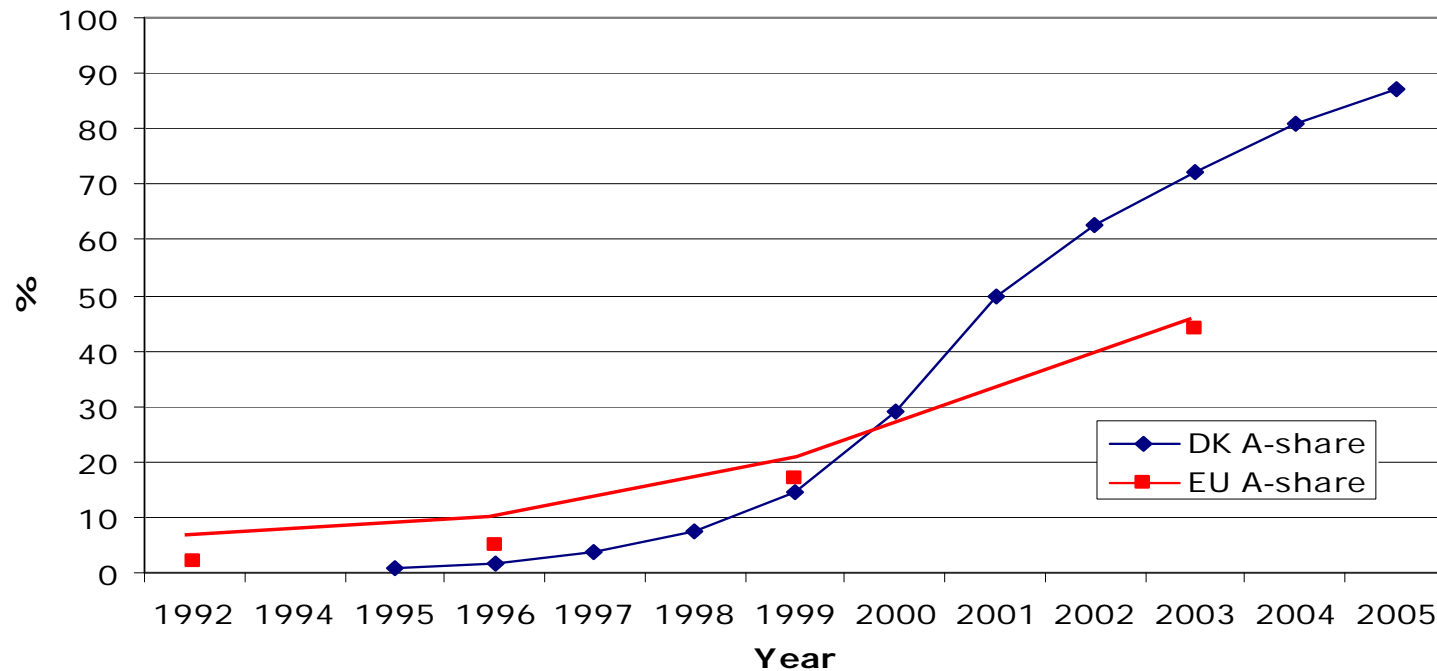
Exports of Energy Technology and Equipment

Billion DKK, Current Prices

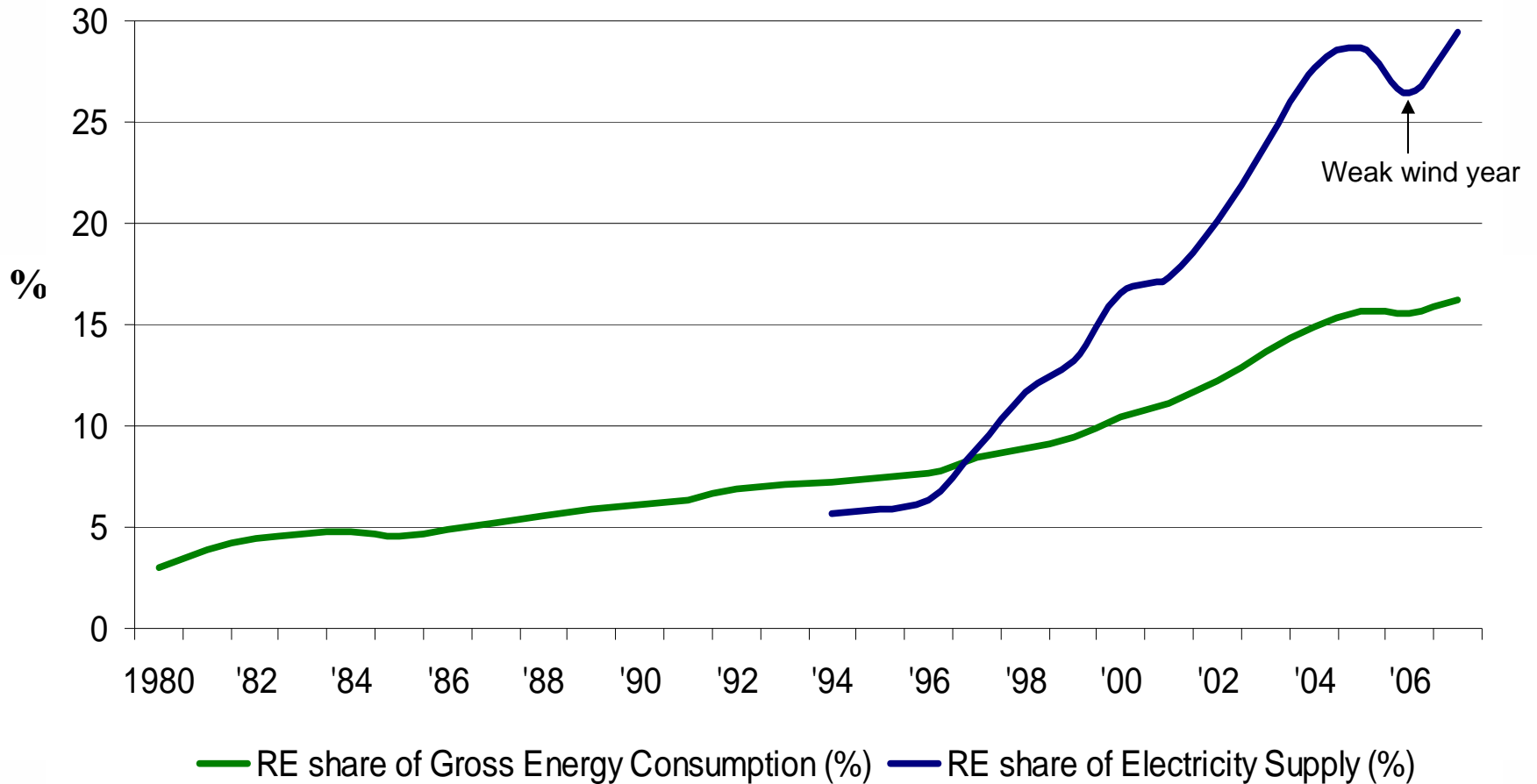


Labelling & campaigns & commitment go together well

Market share of A-labelled cooling appliances in the EU and DK

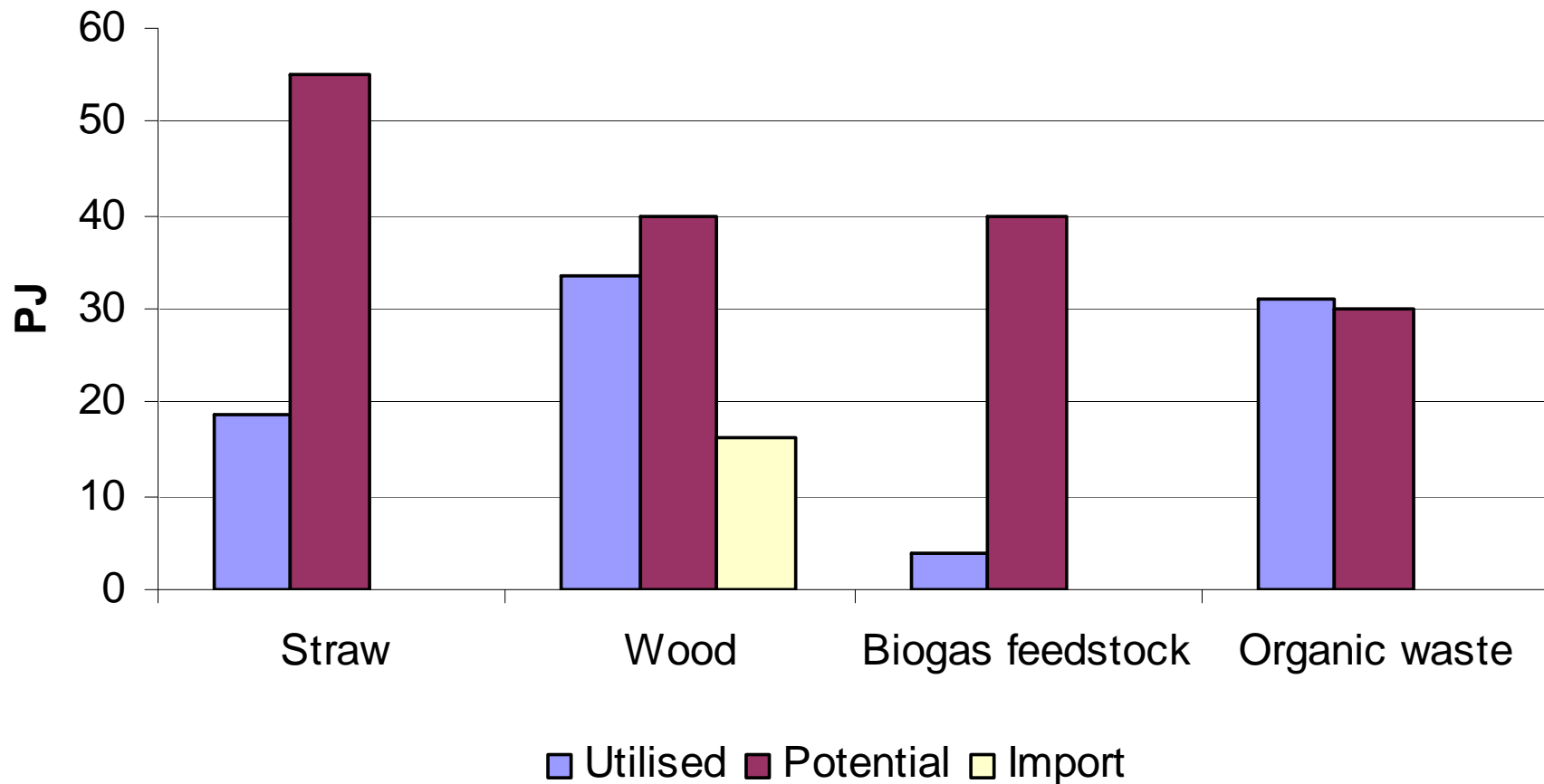


Renewable Energy in Denmark

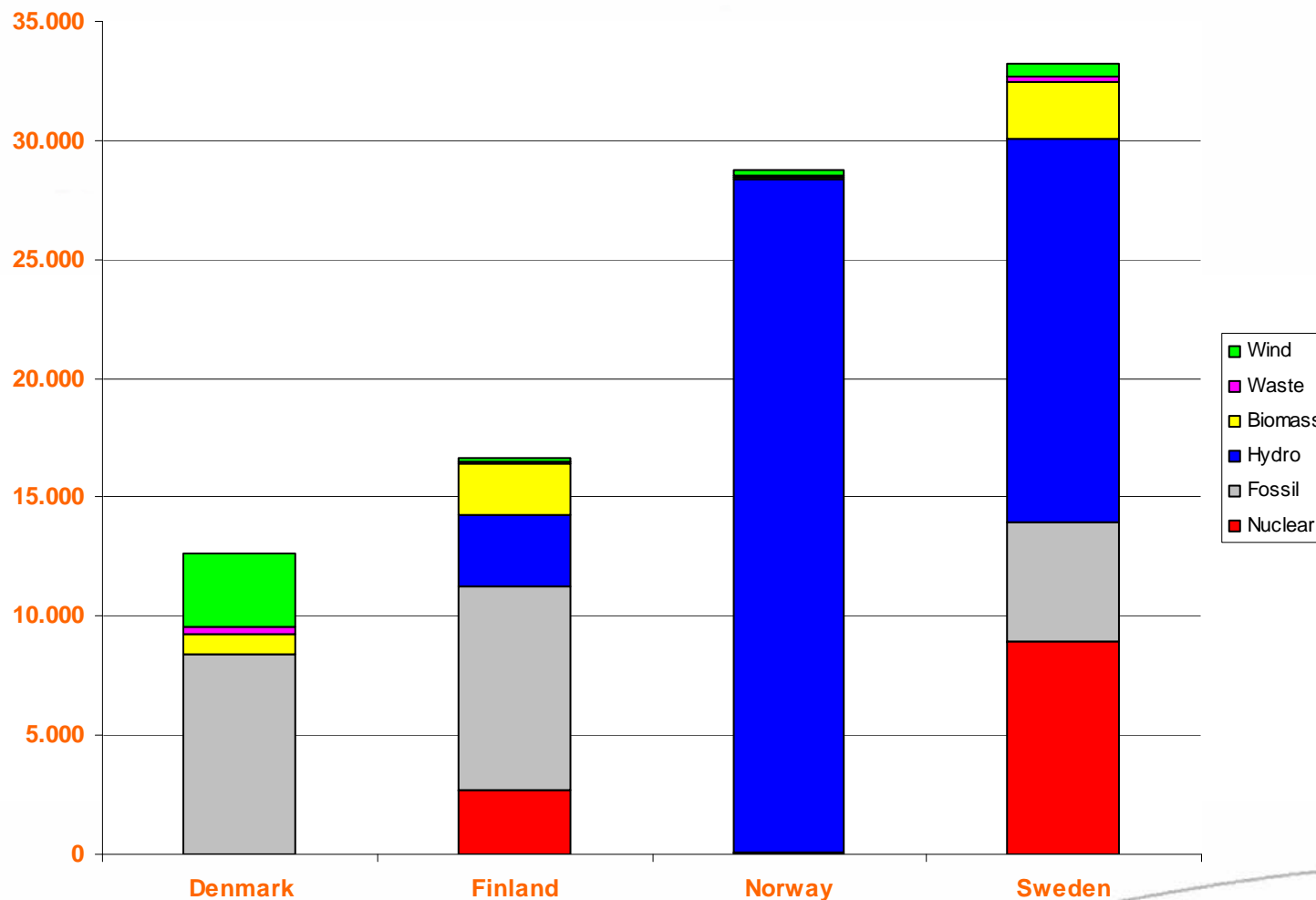


➤ Highest contribution to electricity from **new** renewables in EU

Danish Biomass Resources - 2006

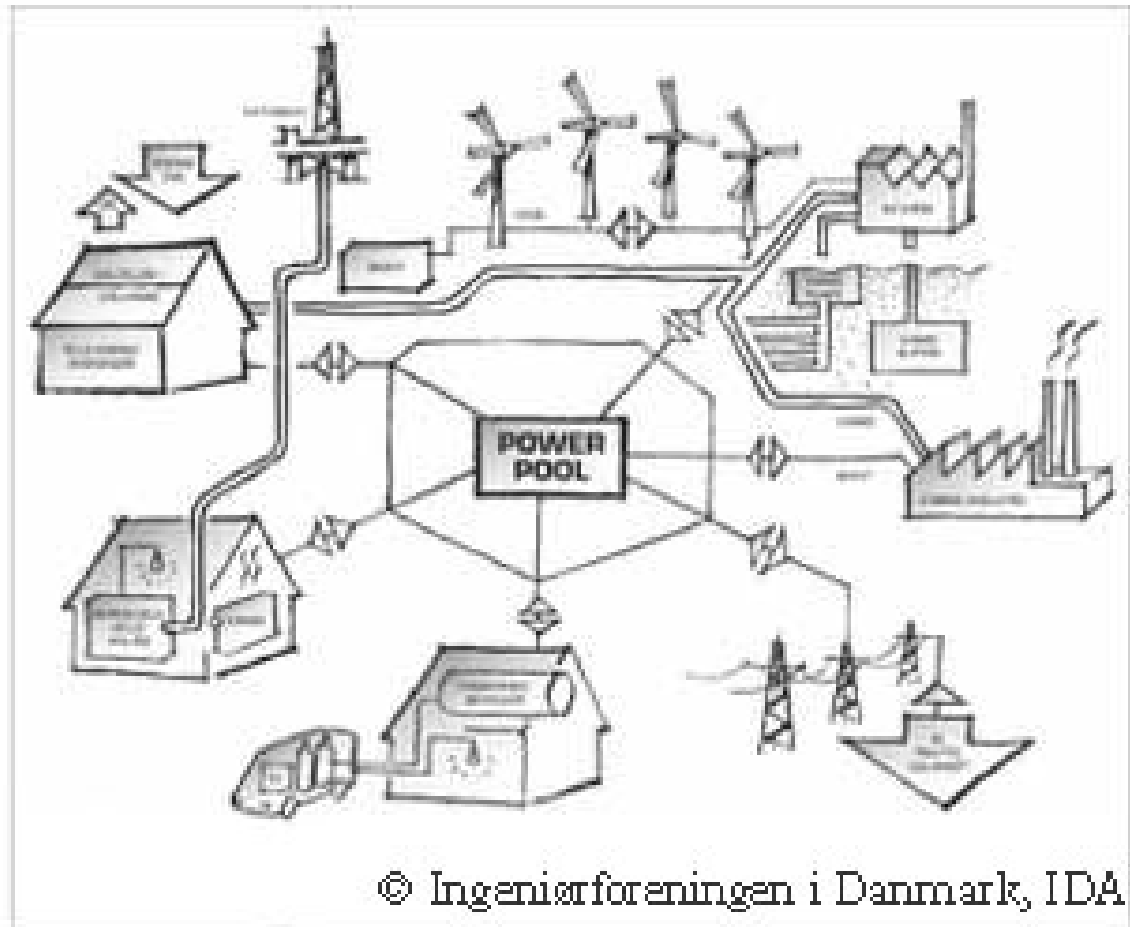


Nordic electricity capacity



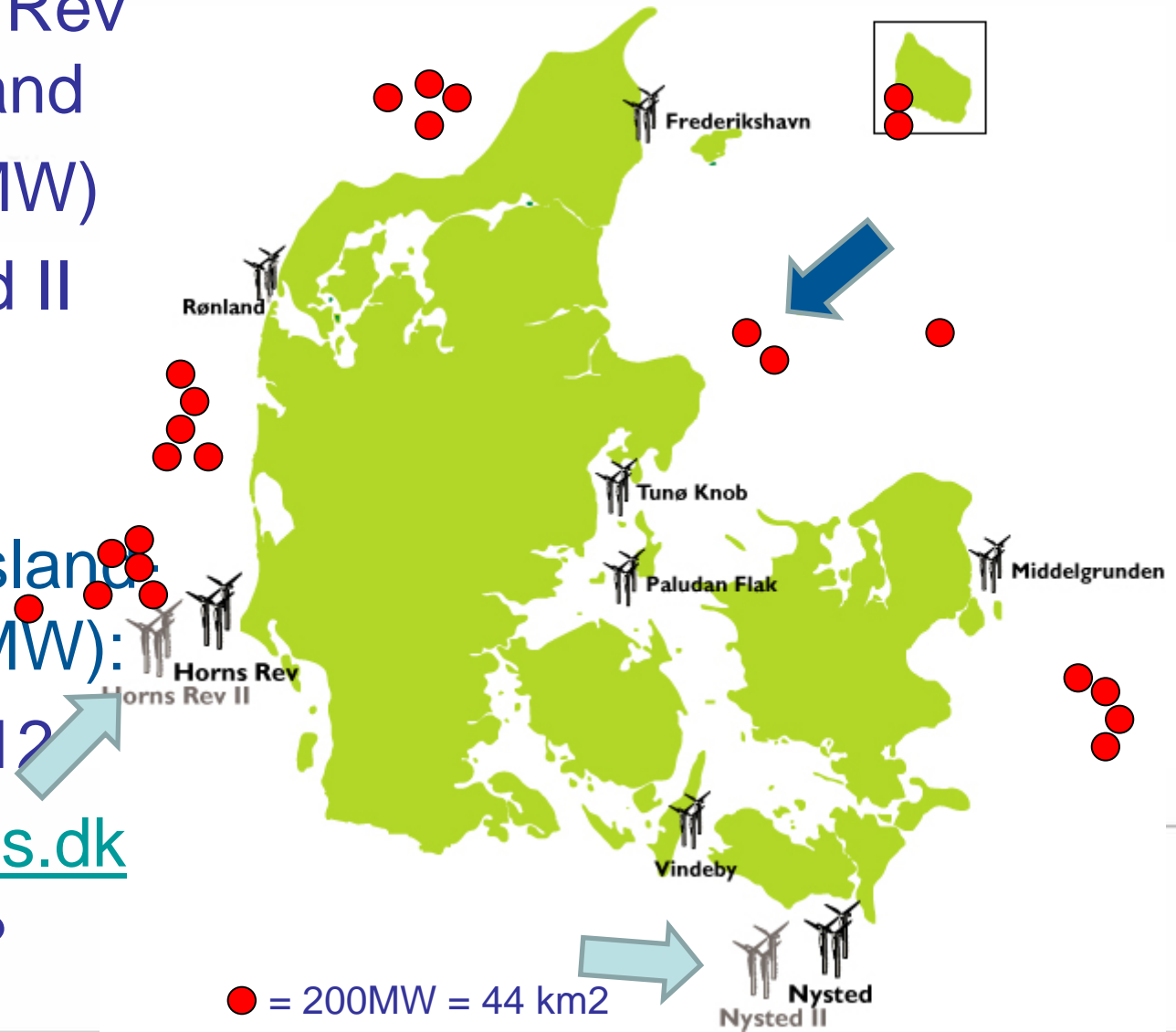
Towards a fully integrated energy system

- Large central plants and decentralised generation
- Some units provide base load, others balance.
- **The future lies in further integration of electricity, transport and heating sectors**

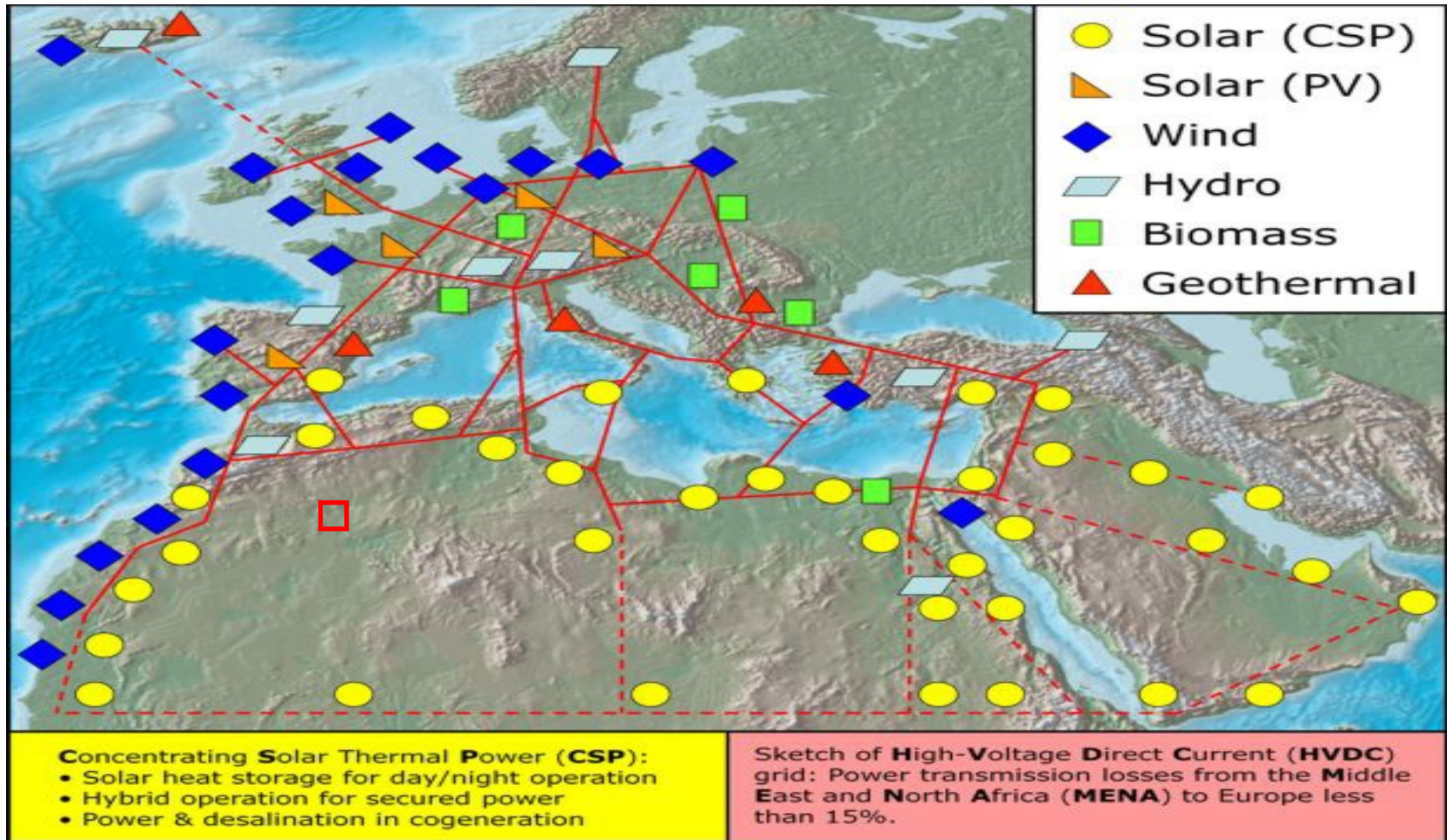


Off-shore wind in Denmark

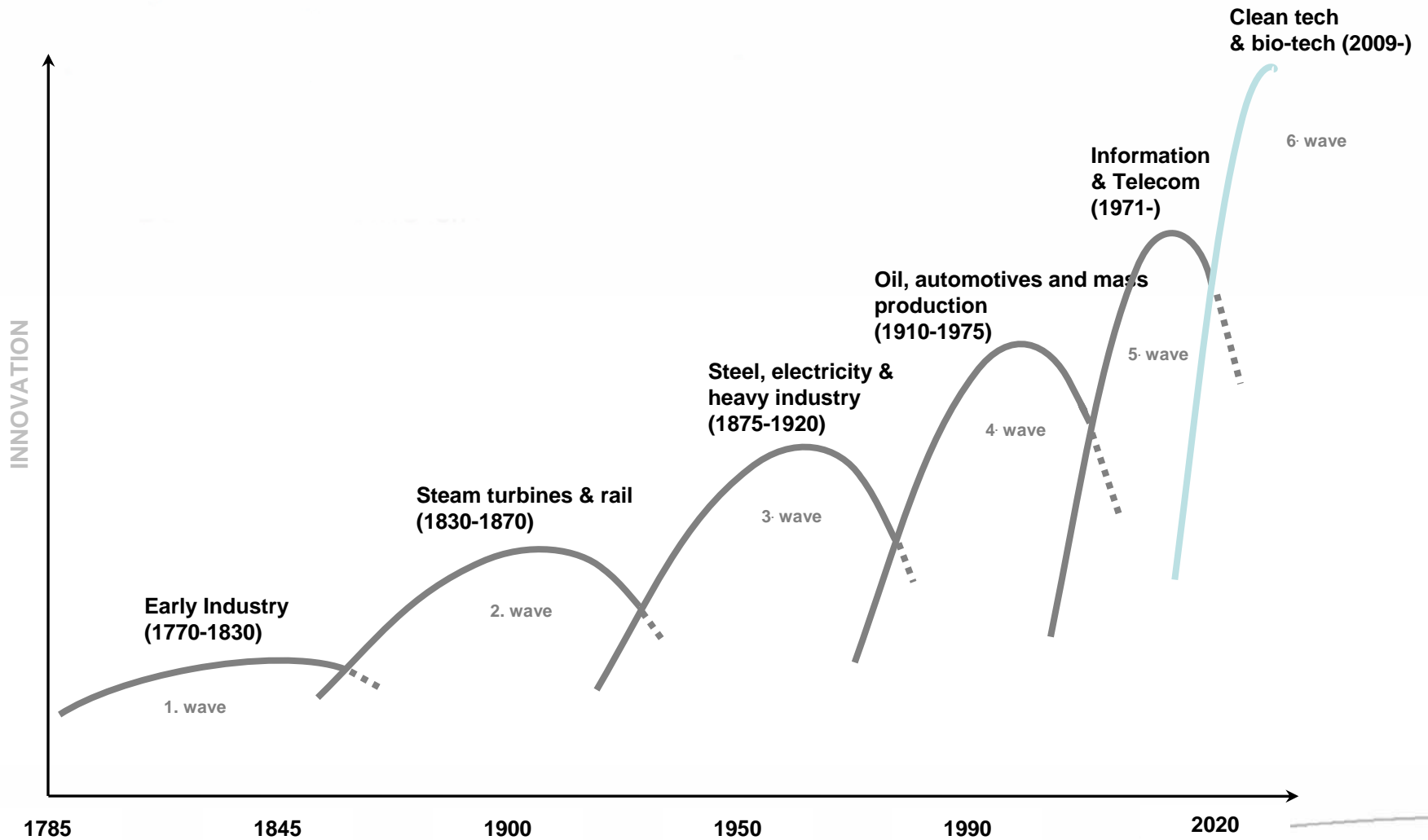
- 2009: Horns Rev II (200MW) and Sprogø (29MW)
- 2010: Nysted II (200MW)
- Tender Djursland, Anholt (400MW):
- Online in 2012
- See <http://ens.dk>
- What's next?



The future?



Source: Trans-Mediterranean Renewable Energy Cooperation (TREC)



Kilde: Merrill Lynch, 2008

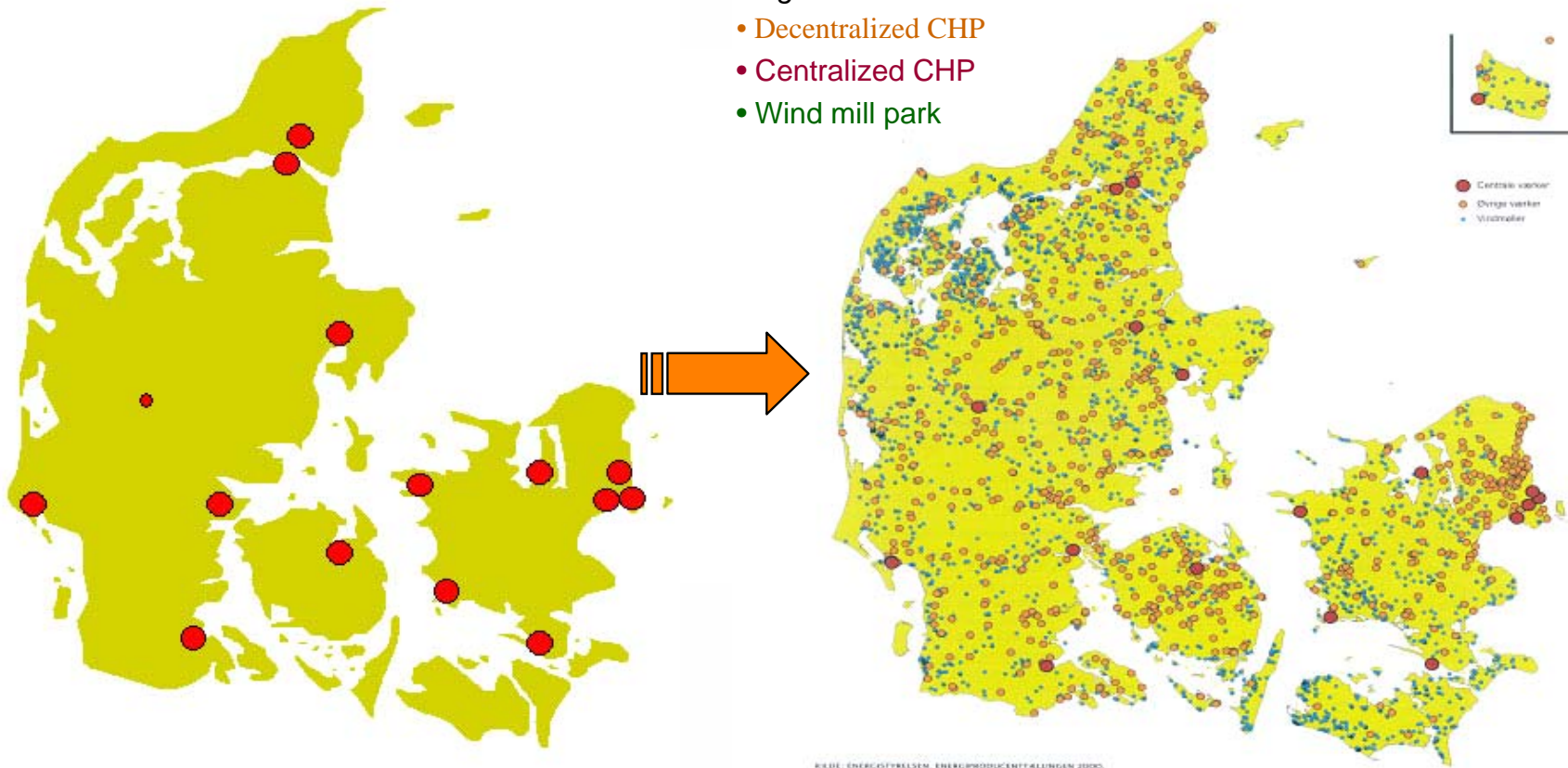
From Centralized to Decentralized CHP

Centralized production in the mid 80's

Decentralized production of today

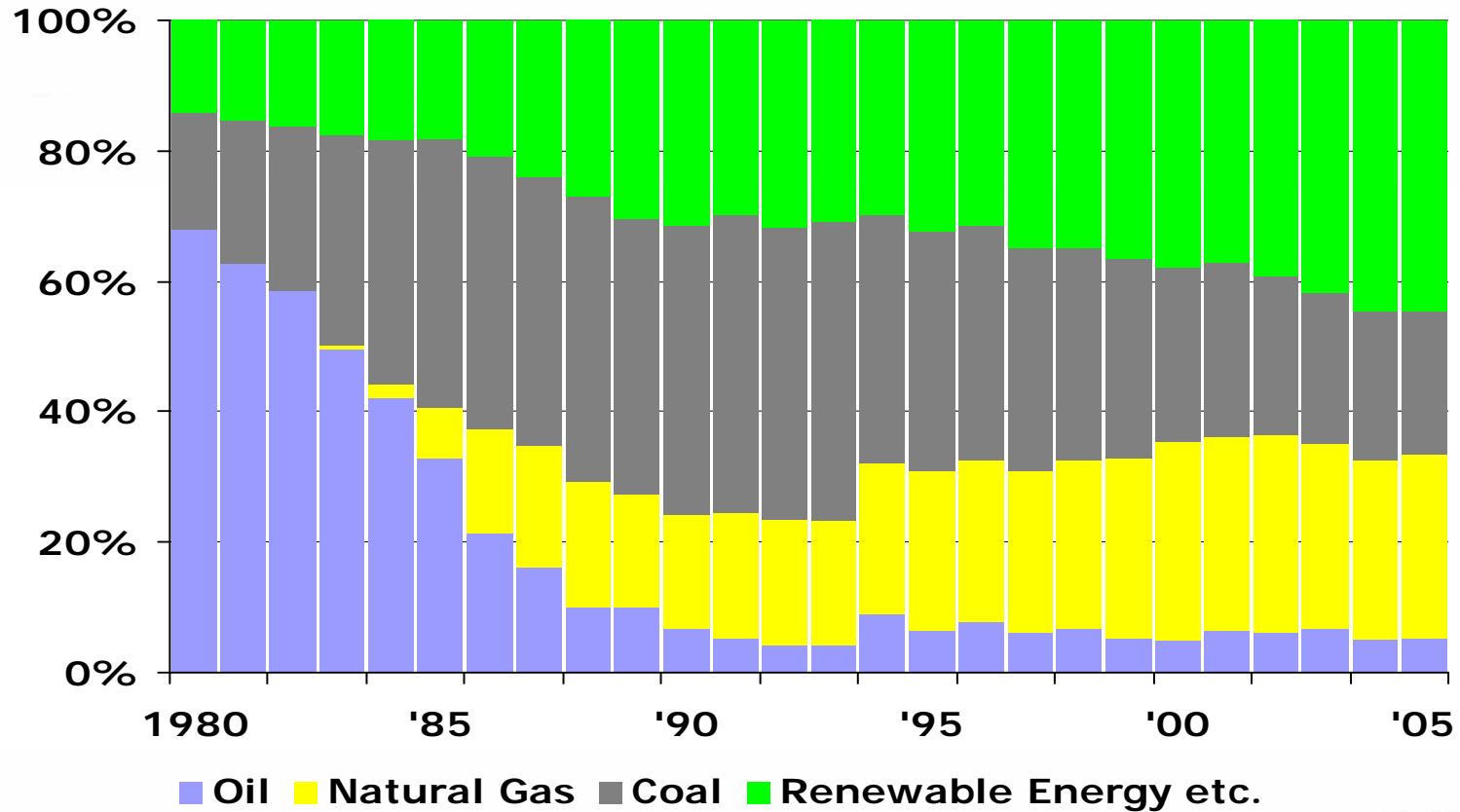
Legend:

- Decentralized CHP
- Centralized CHP
- Wind mill park

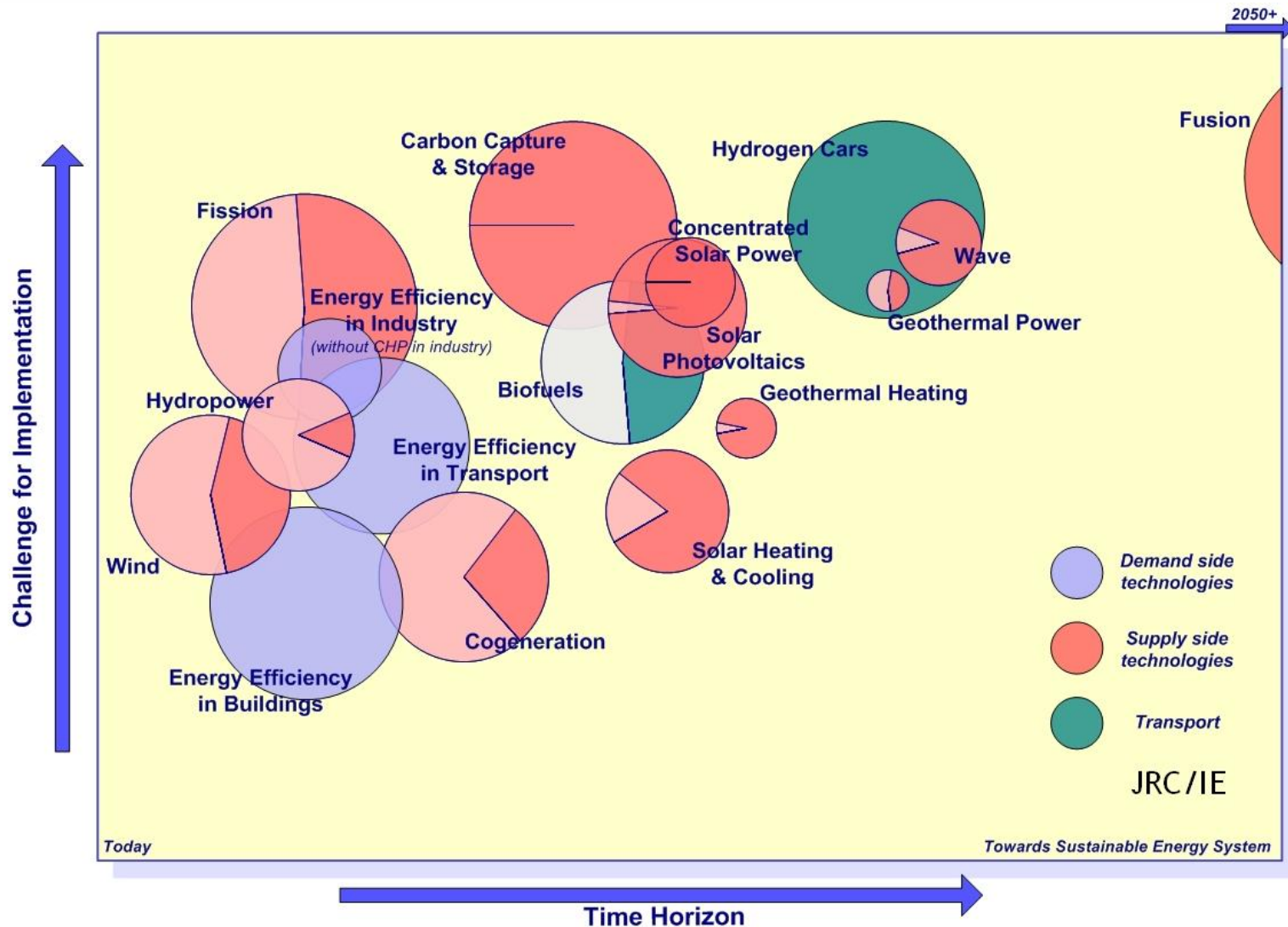


KILDE: ENERGISTYRELSEN, ENERGIPRODUKENTILDELINGEN 2000, VINDMØLLEKØRSTYRELSEN, KØLF & MÅTTEKØRSTYRELSEN 2001

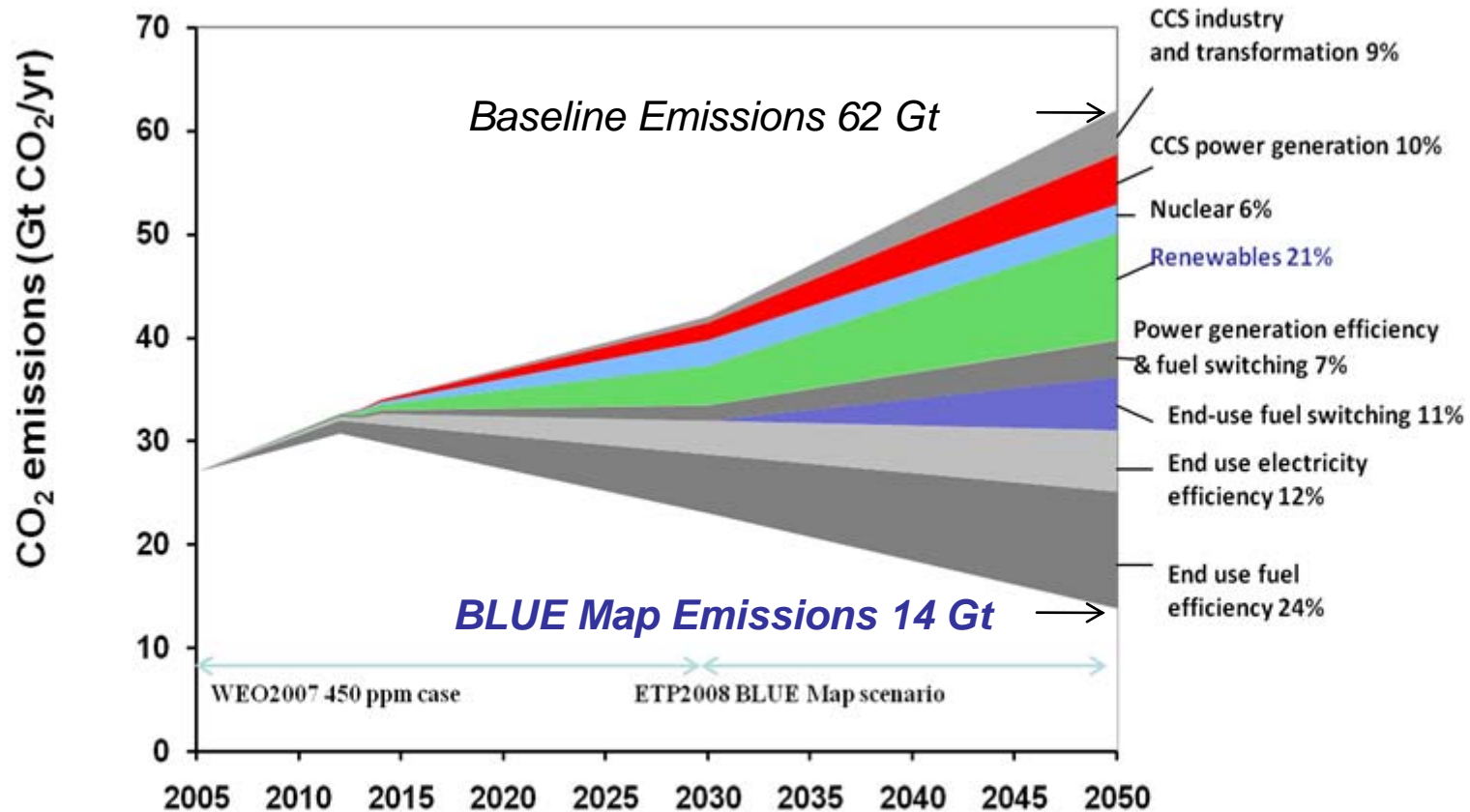
Composition of Fuels for District Heating Production



Technology Map for the SET-Plan



IEA Blue Map Scenario



Danish features

1. Net exporter of oil and gas
2. Highest energy efficiency per GDP-unit inside EU
3. Largest contribution to electricity from new renewables (non-hydro RES) in the world
4. Efficient clean coal technology
5. Leading nation of integrated energy solutions (district heating and CHP, wind turbines, biomass plants, energy saving technologies ...)

