Policy Challenges in Renewable Energy - Denmark

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1. Historical RES-development – a quick picture
2. EU-targets for RES development, DK-policy on use of coop-mex
3. Policy challenges on the way to 2020
4. Policy solution: New energy agreement – expected results and new initiatives

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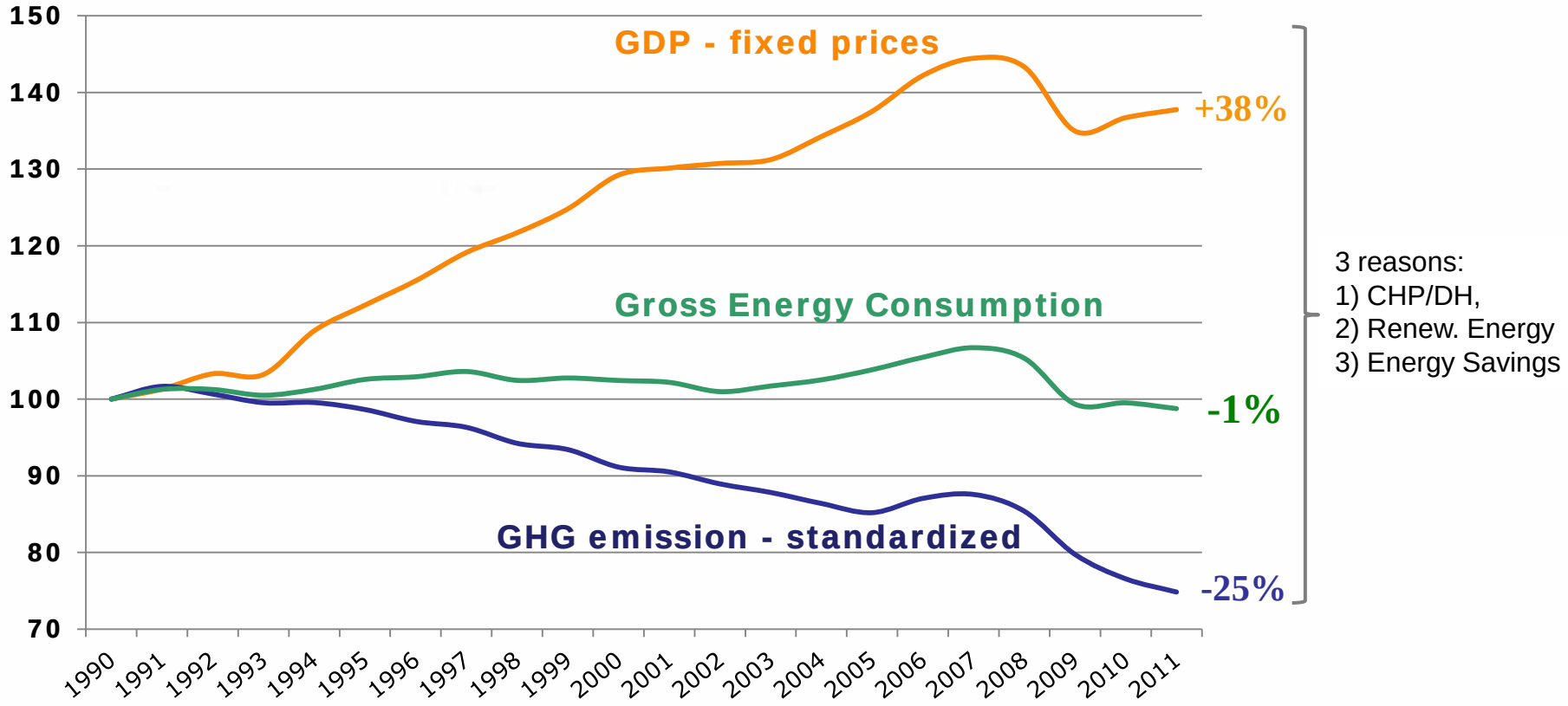
De-linking Economic Growth from Energy Consumption and GHG Emission: 1990-2011



Danish Kyoto Obligation: GHG reduced by 21 pct. from 1990 to 2008-12

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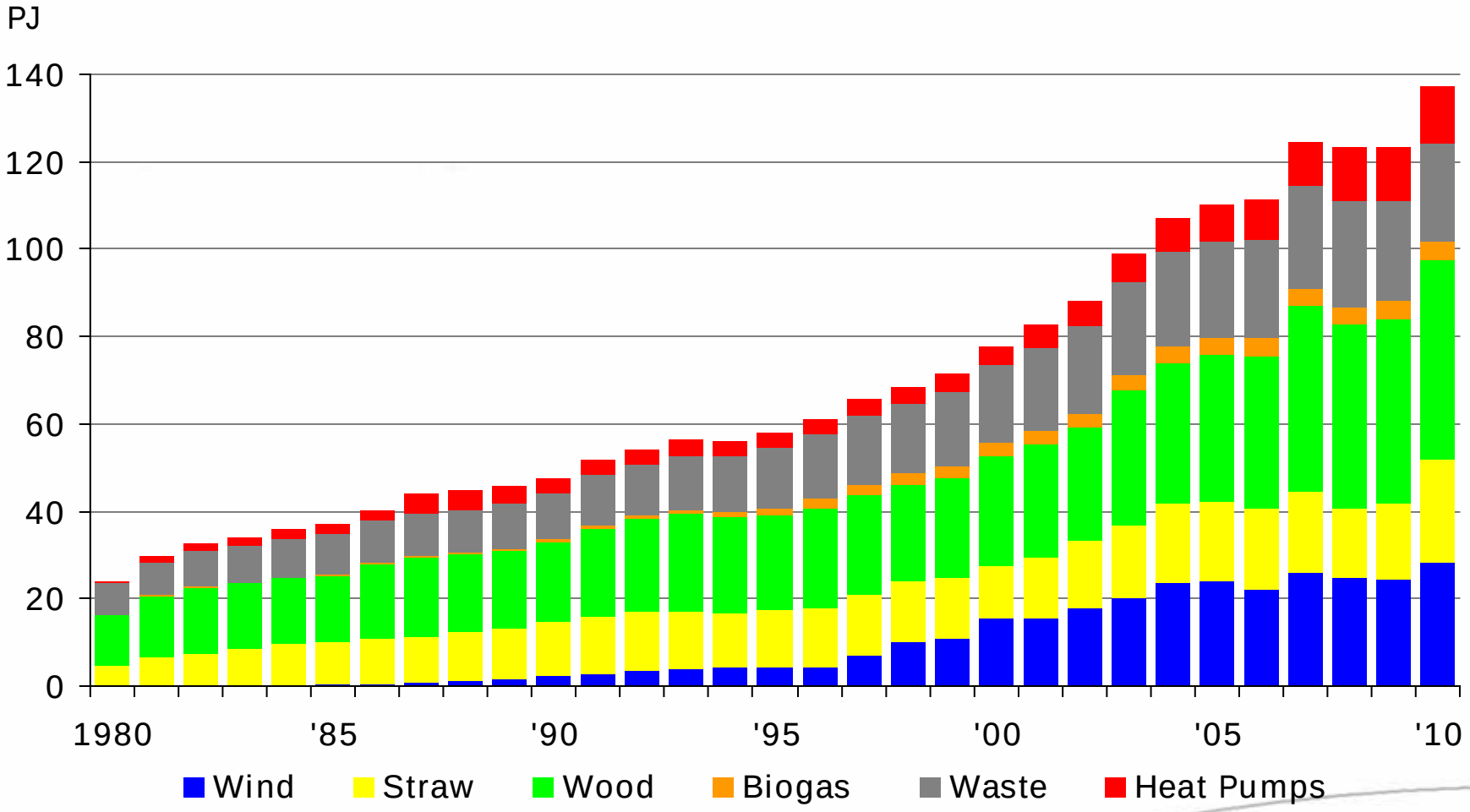
Production of Renewable Energy

1980-2010



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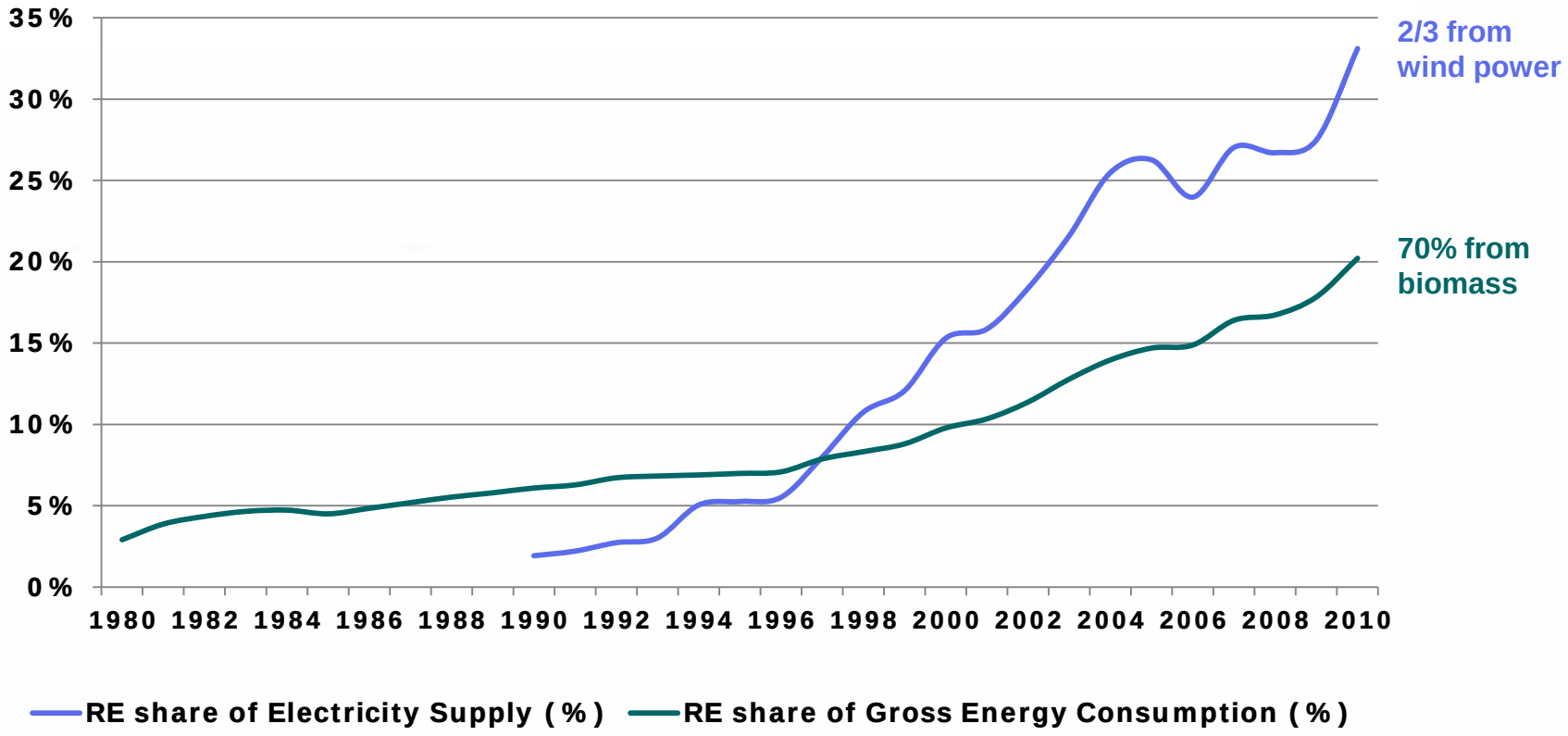
Renewable Energy in Denmark (2010)



- Highest contribution to electricity from **new** renewables in the World
- Total costs for el-consumers in 2010: +1 €-cent/kWh (excl. VAT)

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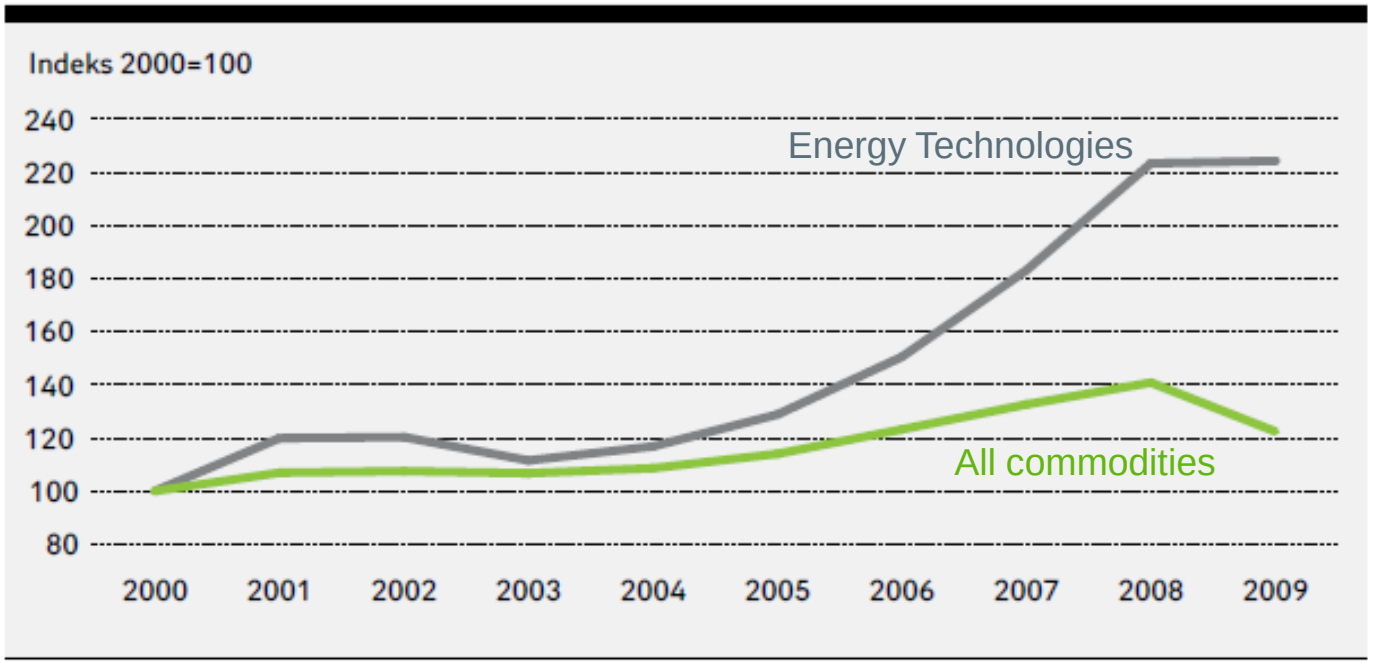
Development of Danish Energy Technology

- The energy technology industries increased the number of directly employed to 12.2 pct. of the total labour force in 2009 from 9.7 pct. in 2000. 25,000 are directly employed in the wind turbine industry.
- The productivity per employee increased 49.7 pct. from 2000 to 2009

Annual turn-over of energy technology vis-a-vis total commodities



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Key Instruments to promote RE

Historic perspective

- Public support to **research, development and demonstration** of RE-technologies
- **Investment grants** for standardized RE-equipment
- **Favourable prices** for electricity fed into the public grid
- **Energy and CO2-taxes on fossil fuels** makes RE more competitive and provides finance for RE subsidies.
- A suitable legislative and **planning framework**, which supports the local initiative and creates predictability = **Confidence building measures**.
- **Agreements** between the Government and the utilities: Wind power programmes and biomass agreement
- In short: A combination of a strong **state and the market**!

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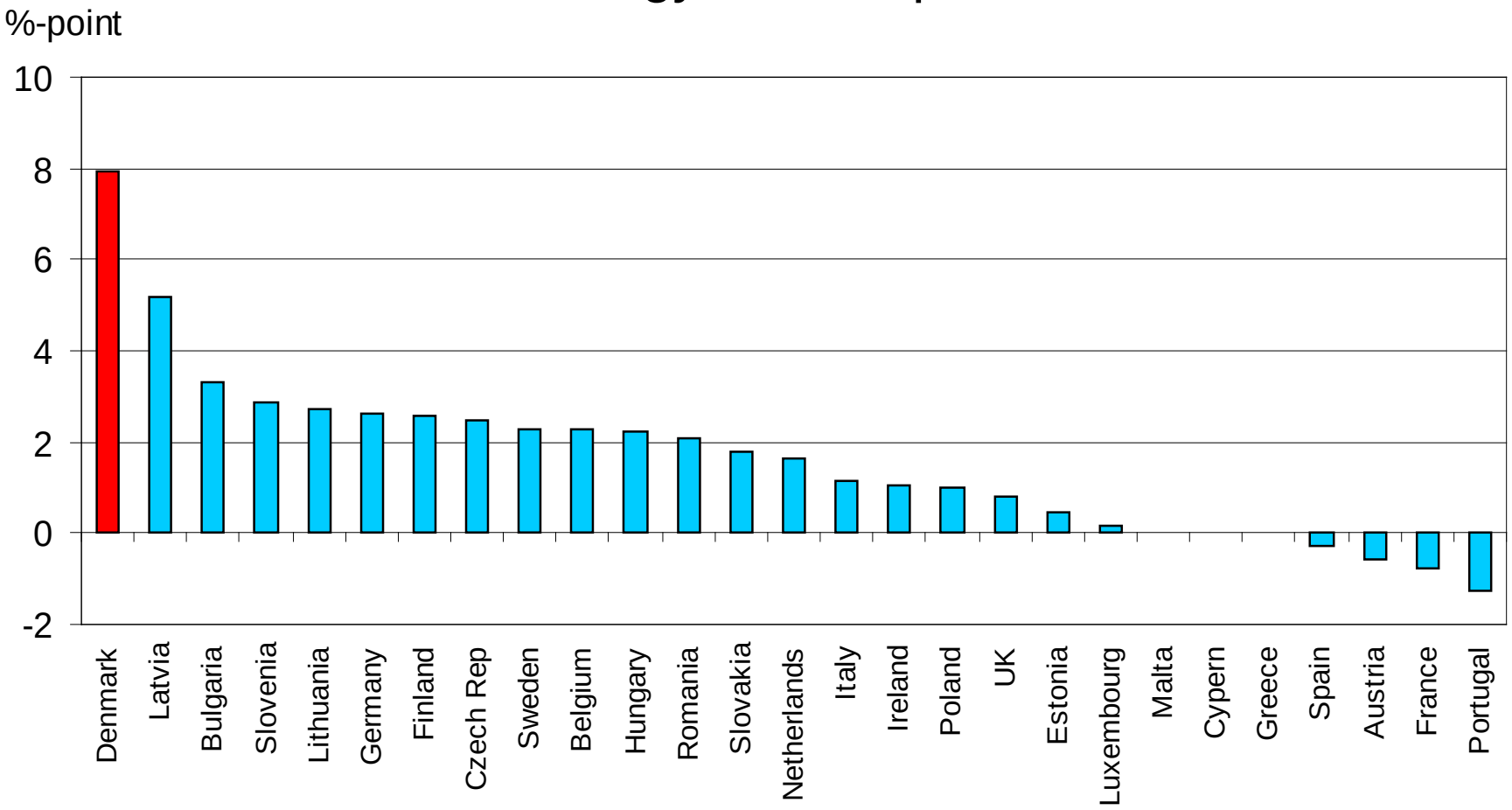
Development of RE in EU

Increase in RE of energy consumption from 1990 to 2005



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The RES directive: Targets for DK

- A 30 % share of RE in DK's (enlarged) final energy consumption
  - Indicative trajectory
- A 10 % share of RE in the transport sector

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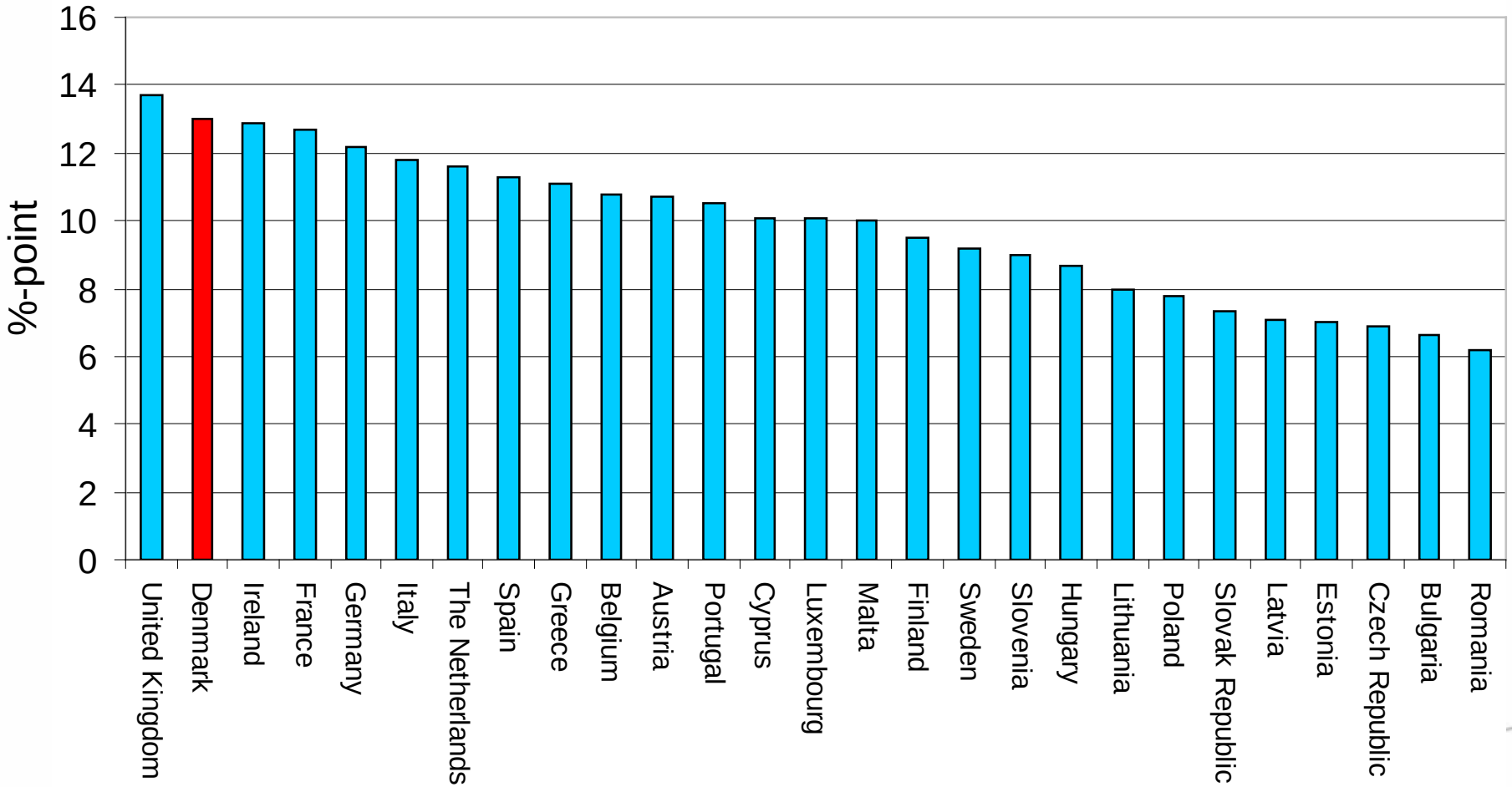
Future RES-increase in EU



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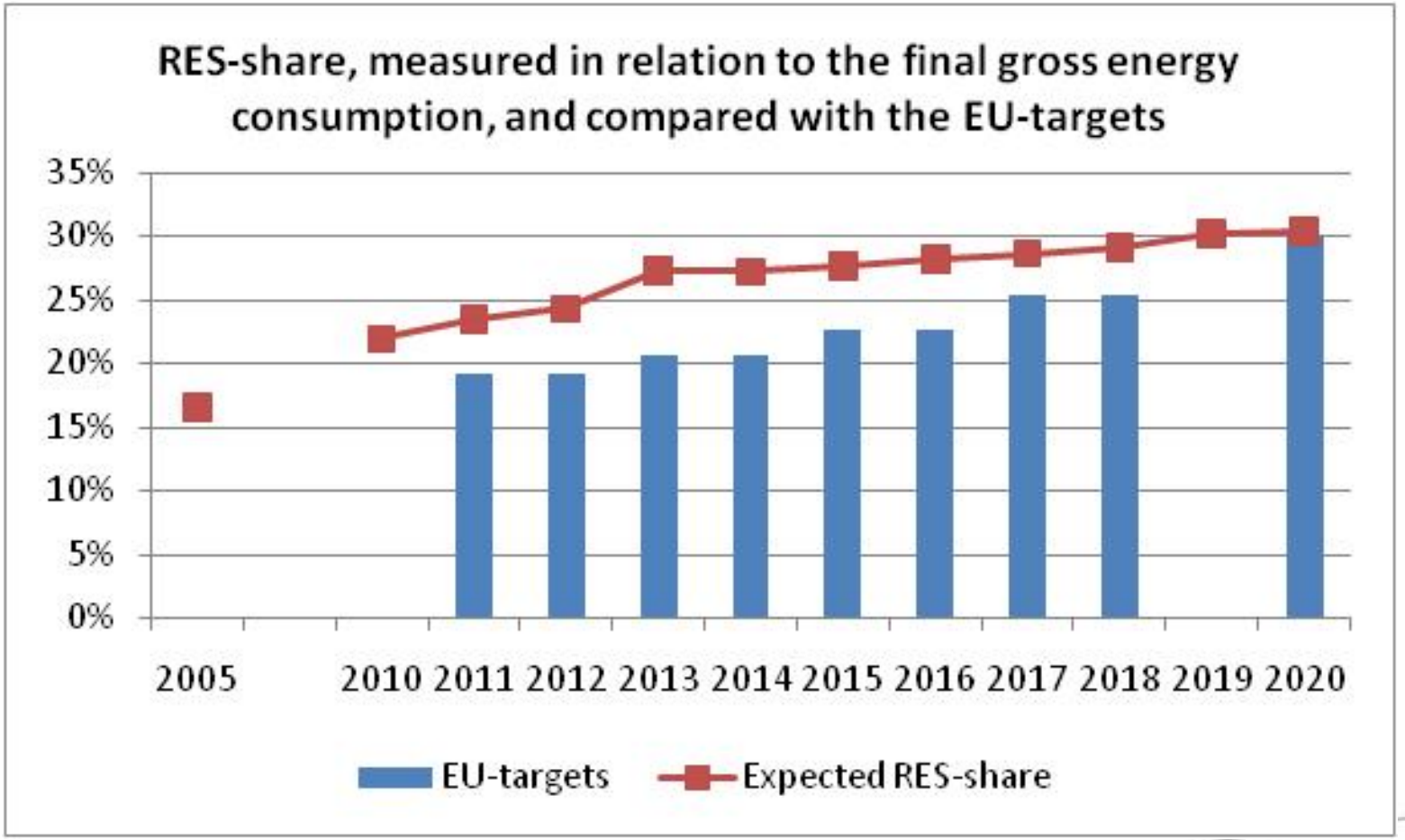
Meeting the overall RES-target



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Current positions regarding use of Coop-Mex

- DK expects to fulfil its targets through domestic initiatives
- DK is willing to transfer surplus RES (and participate in common projects) in the period before 2020
- Need for further operational development of the coop-mex in the RES Directive
- DK may come in a new position as a consequence of the new Energy Agreement in Parliament

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Policy challenges – RES-development until 2020 (1)

Wind power

- Off shore wind: Full governmental control; policy instrument: Tendering model
- On shore wind: Local acceptance; other land use interests

Bioenergy in Danish energy supply

- Solid biomass: Too low financial viability for switching from coal to biomass; risk for ”backwards switching” to coal in e.g. 2019
- Biogas: Too low financial viability; also industry policy (green growth) and environmental policy; use of biogas for other purposes than CHP

Policy challenges – RES-development (2)

RES in industry, buildings and transport

- Too low financial viability for RES-use in industry
- How to reduce use of oil and NG for individual heating
- Transport sector runs (almost) entirely on fossil fuels

Smart grids

- 50% volatile electricity in grid from wind in 2020

Long term structural changes of the energy system

- Switch from a mainly *fuel based energy system* to a more *electricity based energy system*

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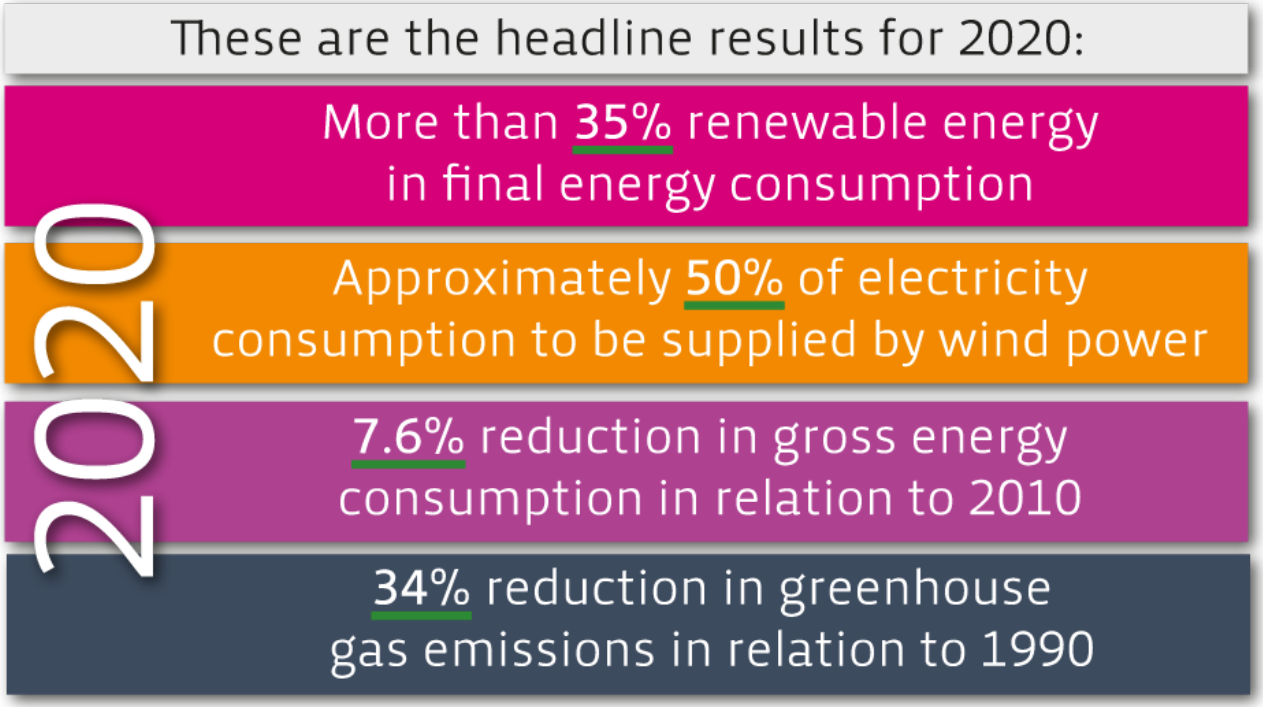
The solution:
New Danish Energy Agreement



Agreed by broad majority in Parliament by March 2012

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Main initiatives in the agreement

1. A more energy efficient society
2. Wind power and new RES-technologies
3. RES in industry, buildings and transport
4. Bioenergy in Danish energy supply
5. Smart grids
6. Financing the initiatives

- Please see leaflet: Accelerating Green Energy Towards 2020

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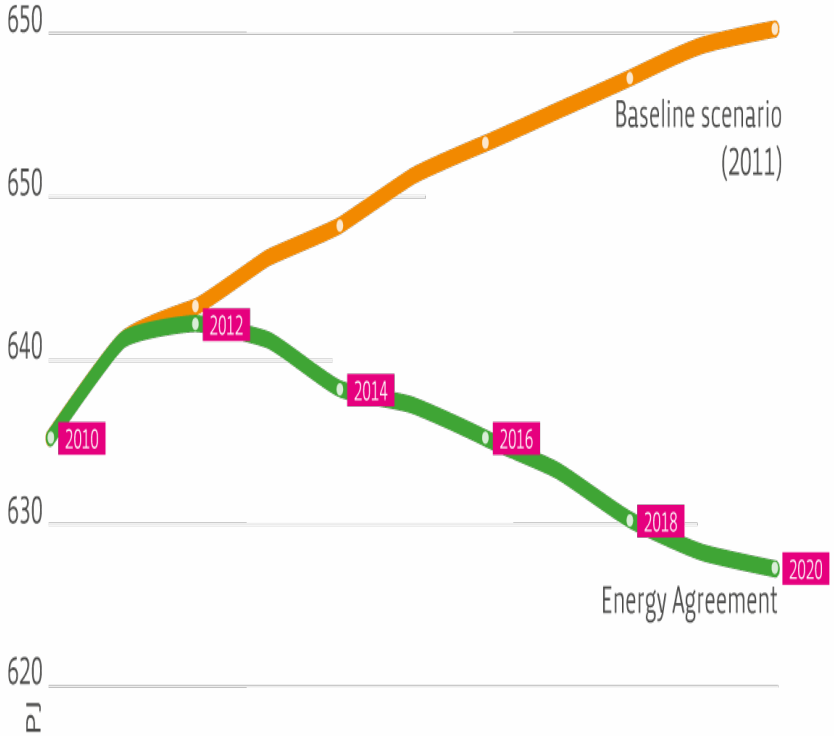
Costs of New Energy Strategy

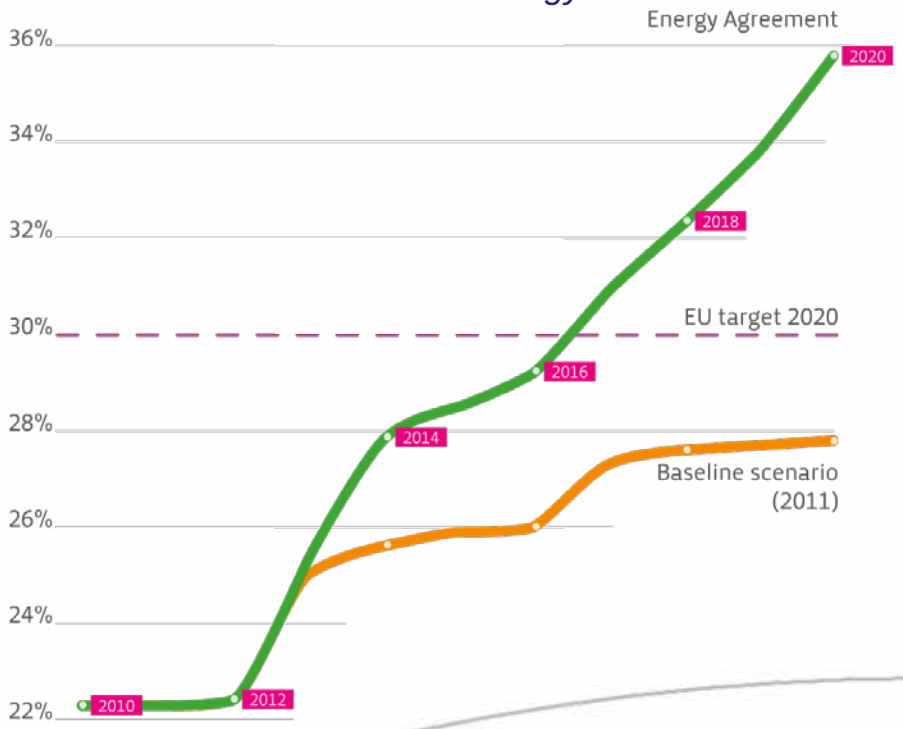
Additional costs are borne by consumers, not state subsidies:

- an average household: 175 € in 2020
- private companies: Average 32 € per employee in 2020

Final energy consumption



Share of Renewable Energy



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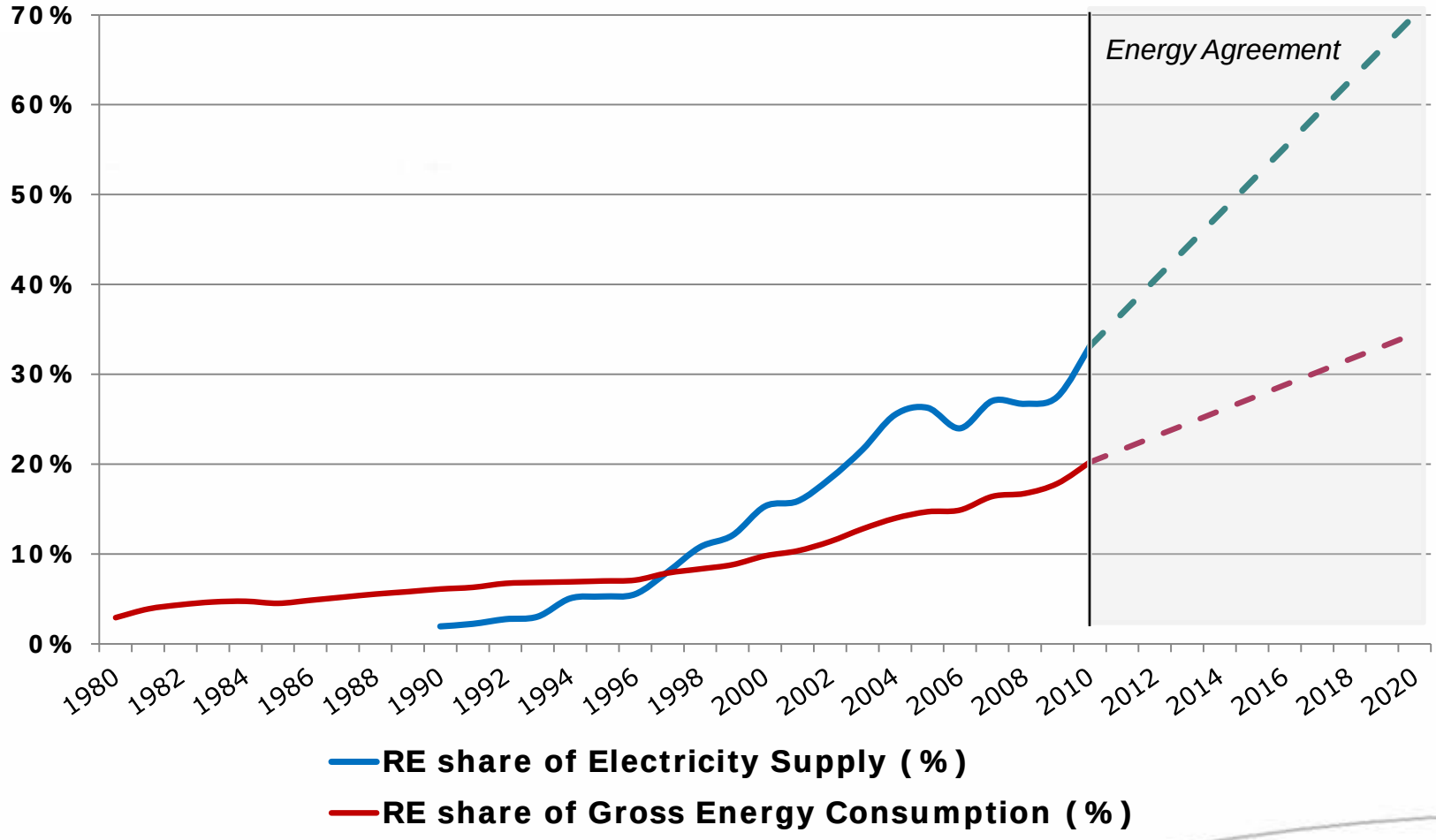
Energy Agreement (March 2012): Development of Renewable Energy



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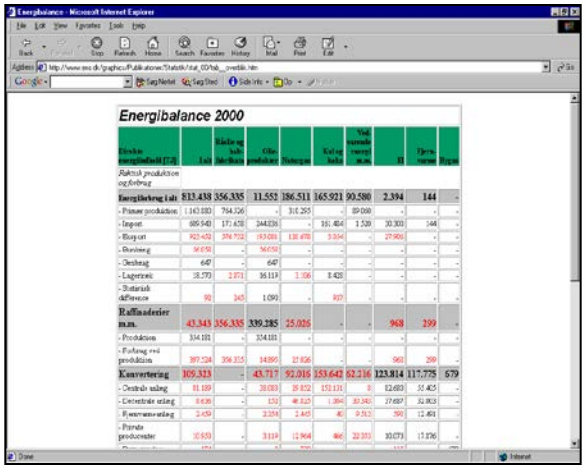
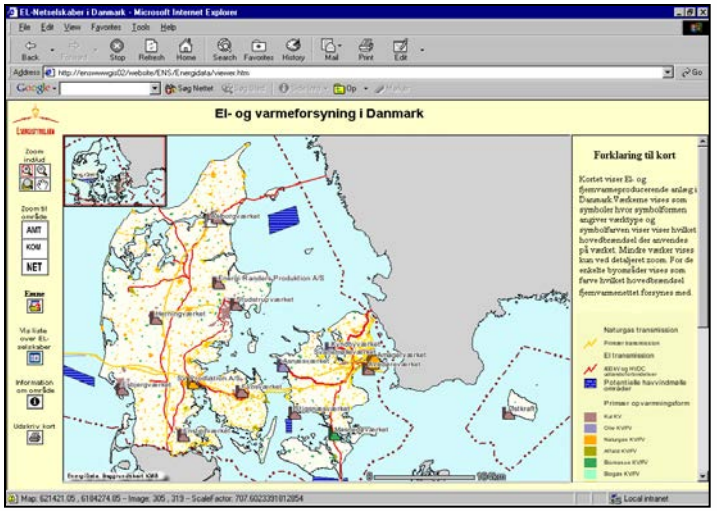
Facts and figures
- Find the data you need

Energy Statistic
- download data



Energy Data
- print theme maps



Themes
- Heat supply
- RE and Offshore Wind
- Links to background reports

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