Towards a low Carbon Society

Focus on the Danish energy strategy for 2050

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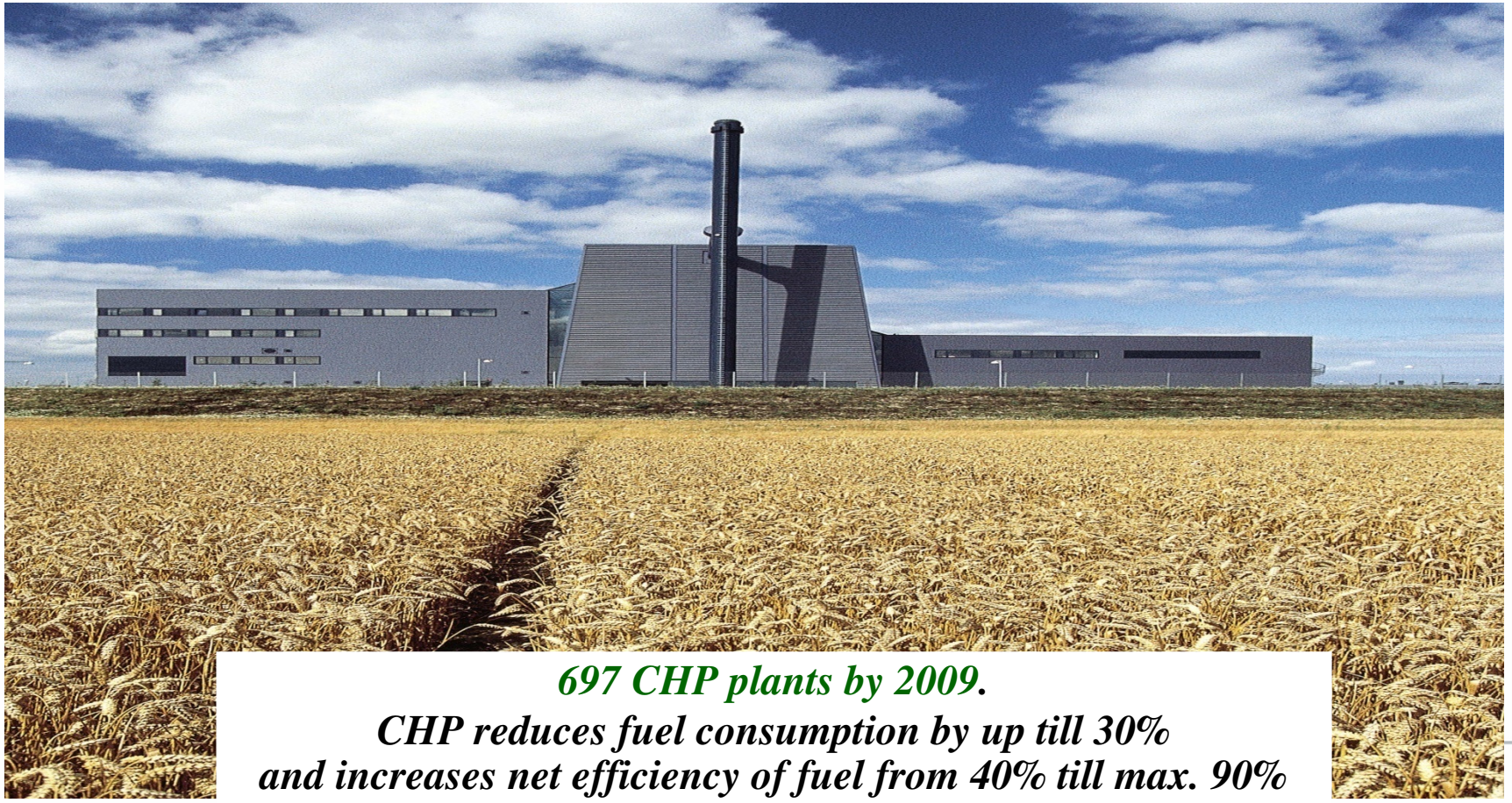
Combined Heat and Power (CHP)



697 CHP plants by 2009.

CHP reduces fuel consumption by up till 30%
and increases net efficiency of fuel from 40% till max. 90%

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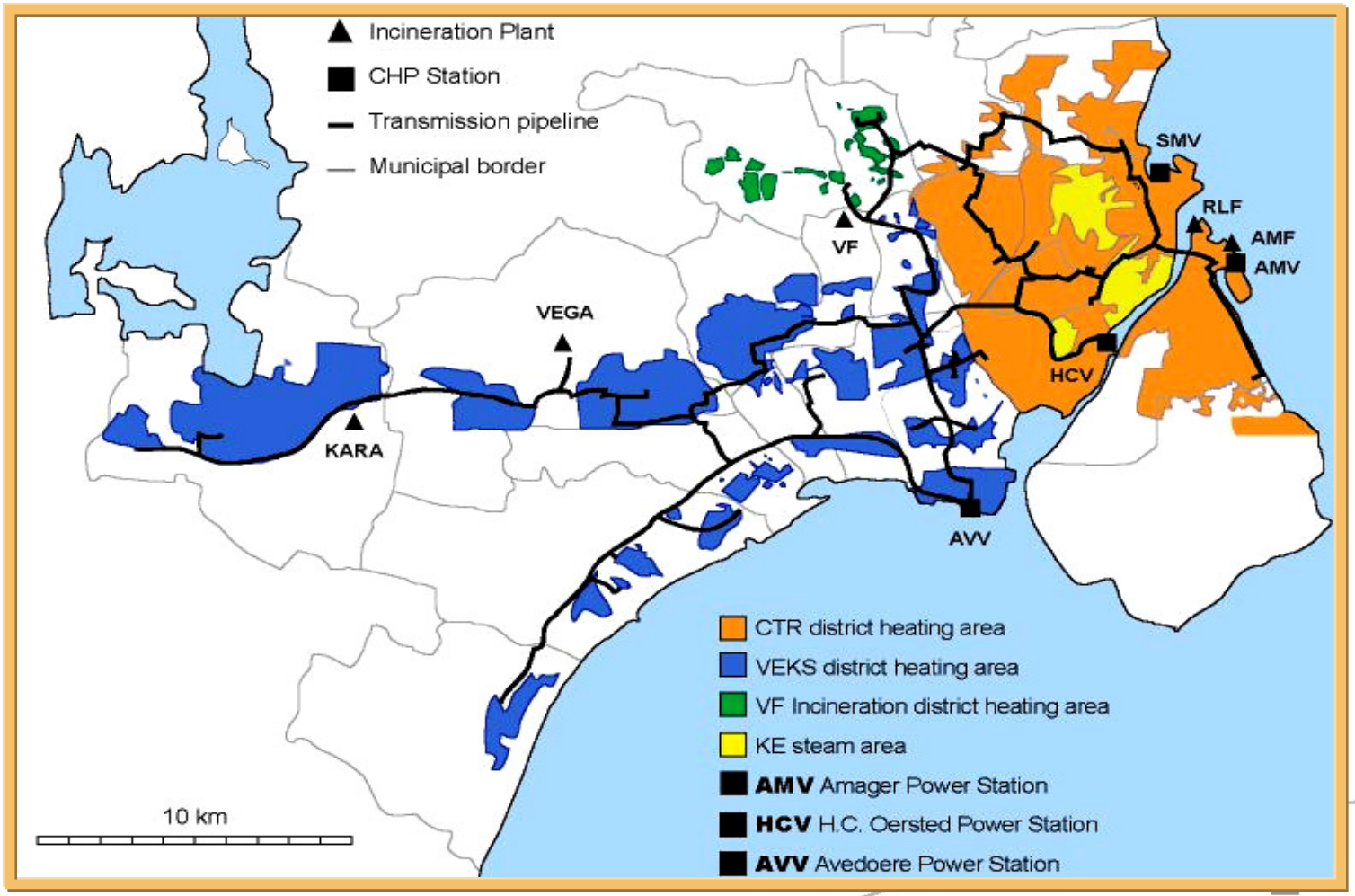
Large integrated systems with optimal load dispatch



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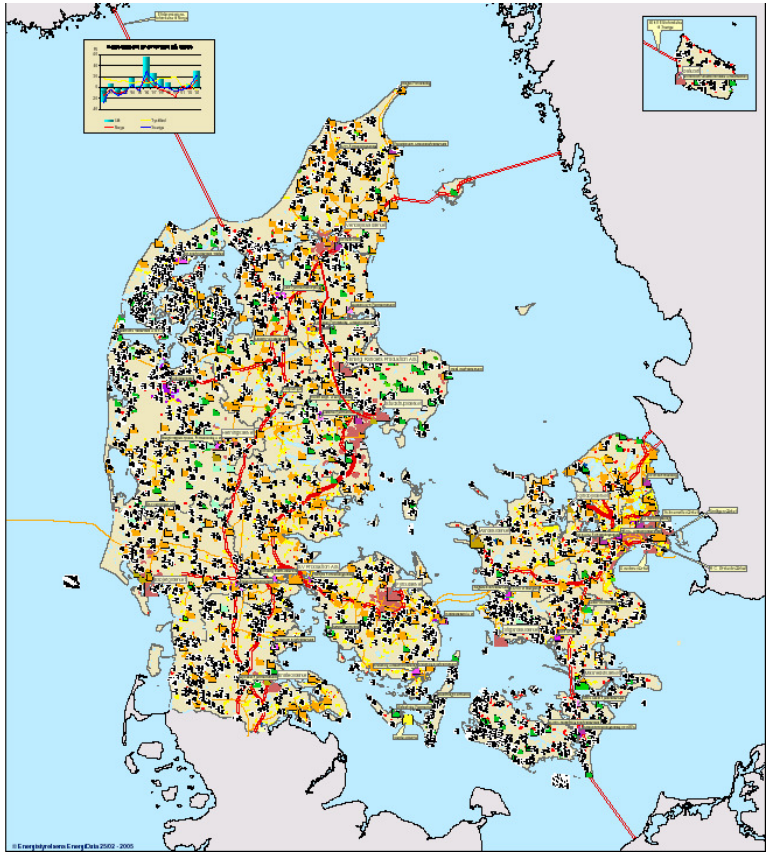
Wind Power in Denmark as per 1 March 2012

Installed capacity app. 3.926 MW of which 630 MW is placed offshore

In total we have 4.978 turbines



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Status - as per March 2012

- Net exporter of energy
- 13.000 Mw installed production capacity
- Central and decentralised production facilities (CHP – plants)
- High standards for energy efficiency in production, distribution and end-use sectors
- 20 % of our energy comes from renewable sources (wind, solar and bio)

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Challenges for Denmark

- Running out of oil and gas
- World market prices on fossil energy are increasing
- Huge impact on the climate
- The energy infrastructure must be refurbished or renewed by around 2030

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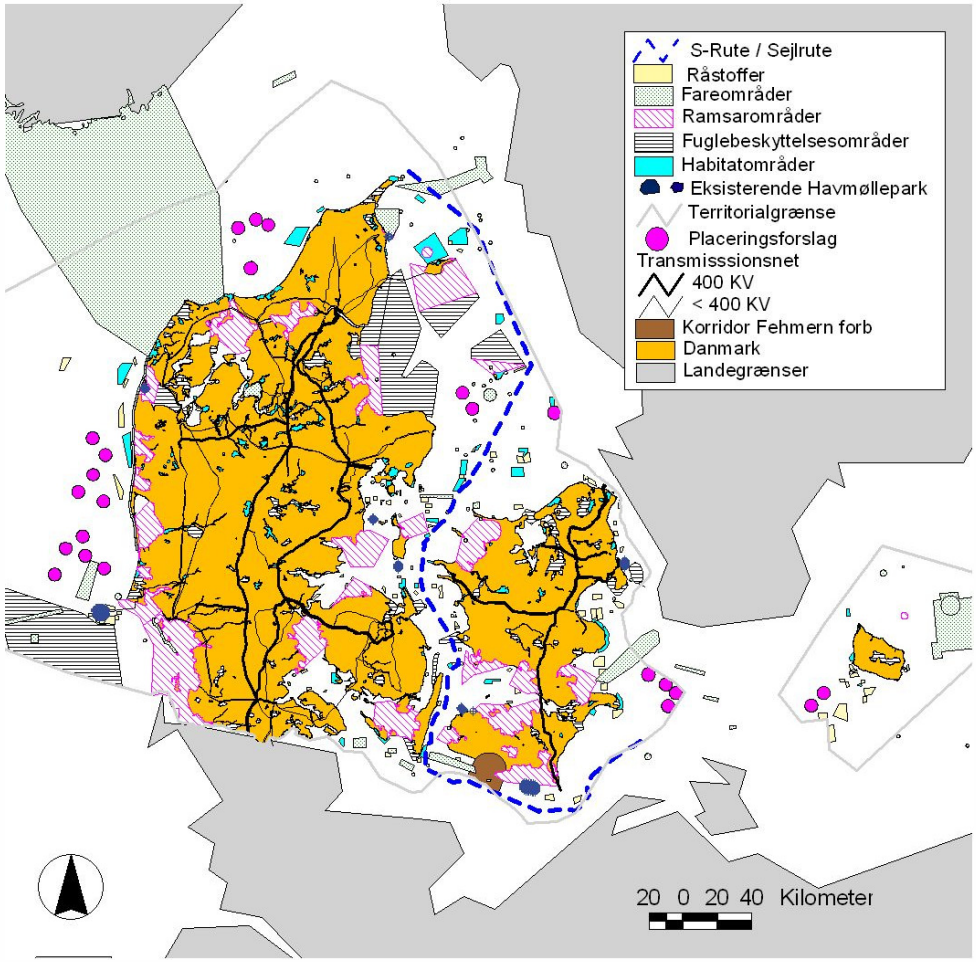
Strategic mapping



- 26 sites of 200 MW identified
- Cost of grid connection taken into account
- 5200 MW in total
- Equivalent 60% of electricity demand

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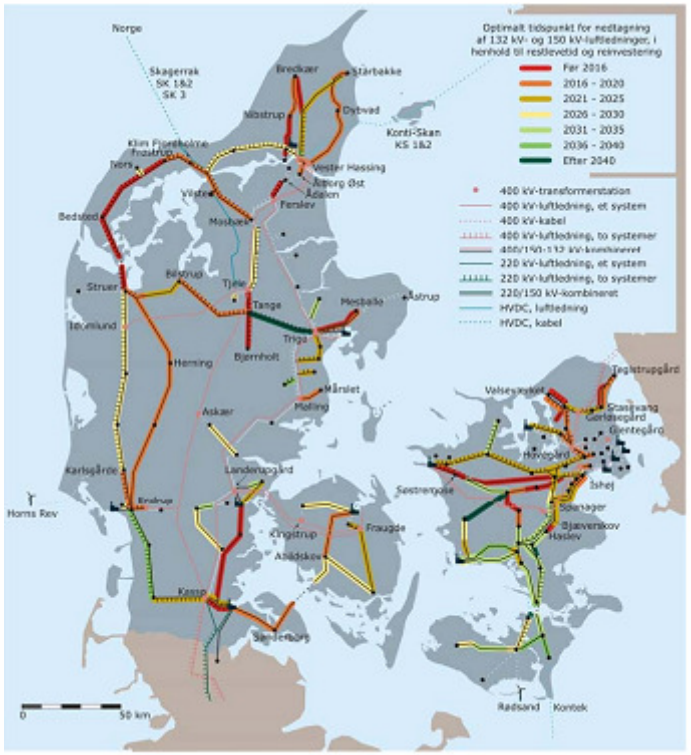
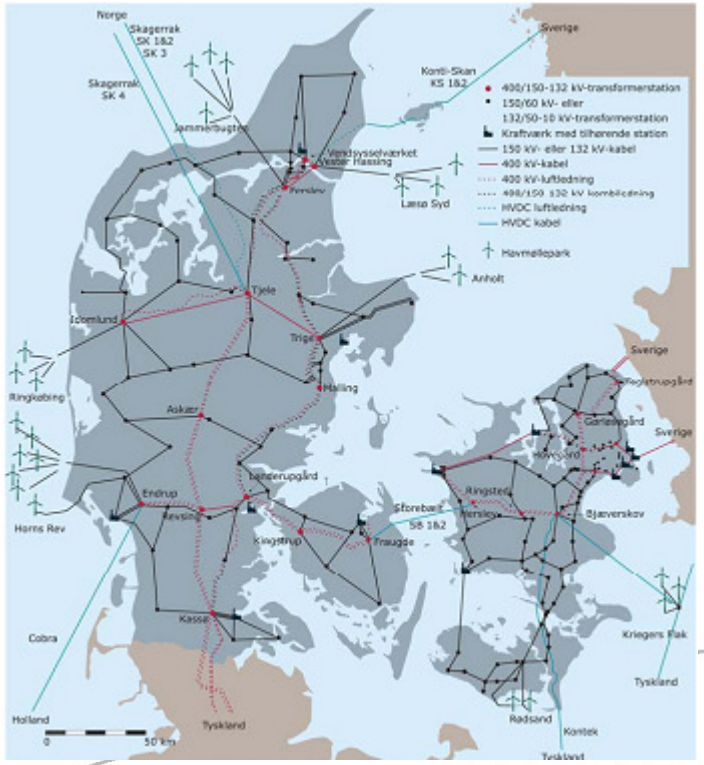
TSO Grid Planning

- Full underground cabling of 3.200 km 132-150 kV overhead lines the next 20 years. Restructured in respect of future wind deployment – a USD 2,5bn investment
- Overhead lines 2010



- Underground Cables 2030



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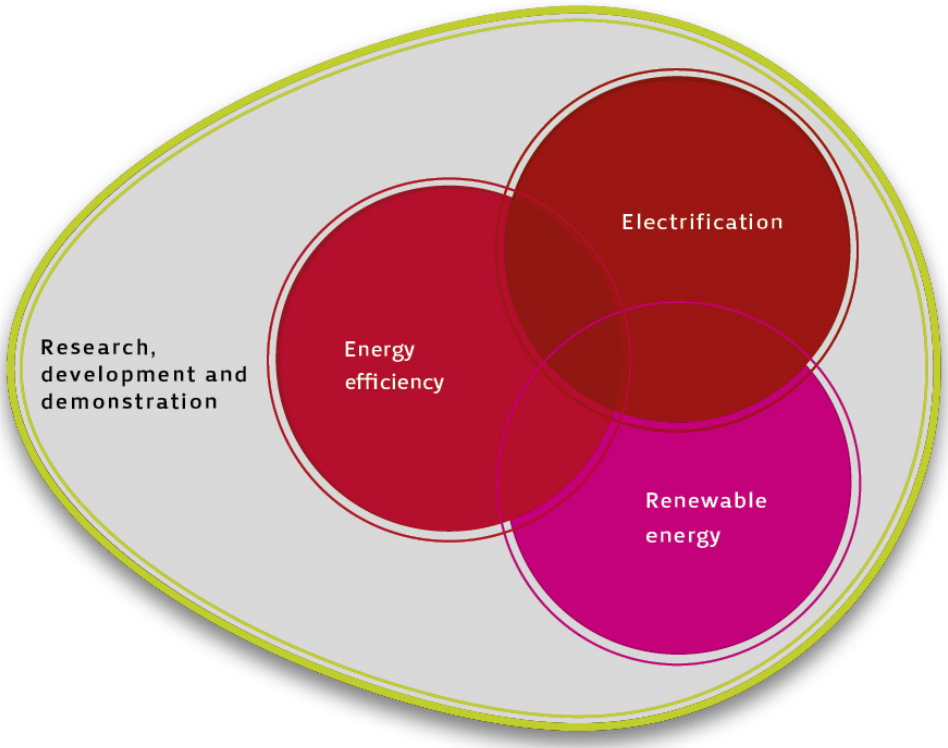
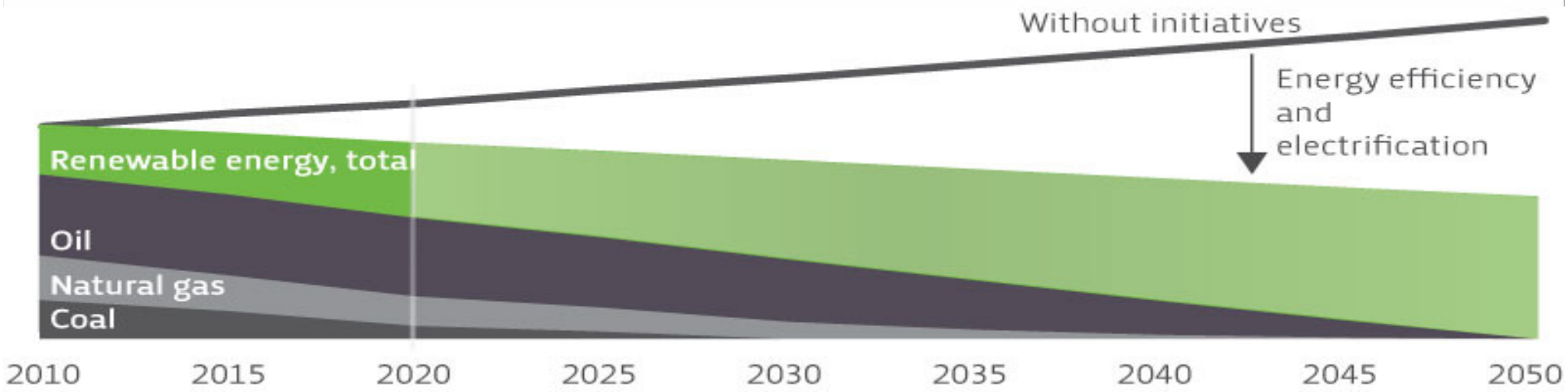
OUR
FUTURE ENERGY
THE DANISH GOVERNMENT
NOVEMBER 2011


Research, development and demonstration
Energy efficiency
Electrification
Renewable energy


Without initiatives
Energy efficiency and electrification
Renewable energy, total
Oil
Natural gas
Coal
2010
2015
2020
2025
2030
2035
2040
2045
2050

New Energy Plan

- The government's goal is to cover the entire Danish energy supply in 2050 with Renewable Energy.
- Some important milestones:
  - 50 % of electricity consumption to be based on wind power by 2020
  - Coal is to be phased out from Danish power plants and boilers by 2030.
  - All electricity and heat to be based on renewable energy in 2035
- A New Climate Plan that point toward a 40 % reduction target of GHG emissions by 2020
  - to be put forward in 2012

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Energy Efficiency
New concrete policy initiatives

2012 **Under negotiation** 2020

Step up of energy saving obligations on energy distribution companies targeting buildings and businesses

Tighter building codes and standards for building components

Support to renovation in existing buildings

No new oil boilers – date to be determined

Promotion of RE-based heating

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Renewable Energy
New concrete policy initiatives

2012 **Under negotiation** 2020

A significant shift in electricity production is to be undertaken, where coal constitutes the dominant source today.

Denmark will fulfill the EU RE target for DK of 30 % by 2020.

Wind power - By 2020 wind alone will cover over 50 % of total electricity consumption.

1. 600MW offshore wind power at Kriegers Flak in the Baltic Sea
2. 600MW offshore wind power – location to be determined
3. 400MW near coast wind power incl. test facilities
4. 500 MW additional wind power on land through new planning initiatives

Biomass

1. Fuel shift from coal to biomass at large-scale heat and power plants
2. Improve the incentives for using biomass in power plants and improved economic incentives for deployment of biogas.

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Transport

New concrete policy initiatives

2012 **To be negotiated** 2020

Transport accounts for almost one third of the total use of fossil fuels and is today almost totally dependent on fossil fuels. Towards 2050 the transport sector therefore should undergo a radical transformation.

Short to medium term incentives:
- Requirement of bio-fuels blend-in by 2020
- Electric cars and Plug-in-Hybrid vehicles
- Deployment of the infrastructure of charging stations

The roll out of a green transport sector is one of the biggest challenges as new ground breaking technology development is needed.

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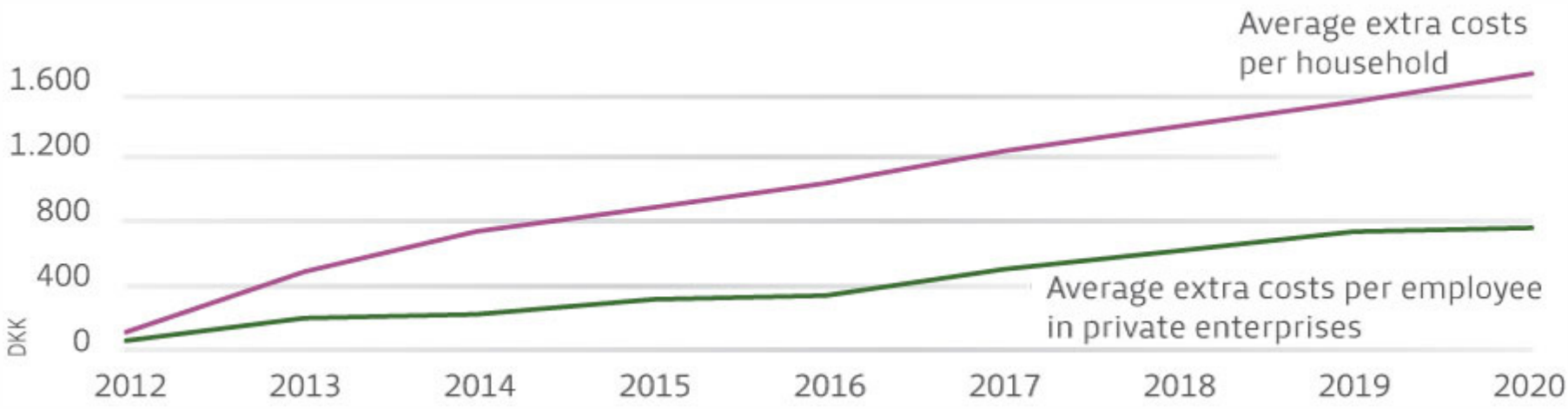
Incentives and Finance

- The shift to more energy-efficient technology and renewable energy needs finance:
  - A fair distribution of burdens, consideration of competitiveness for Danish enterprises, the interests of ordinary consumers, and the creation of new jobs – all are prerequisites for the design of the financial challenges ahead.
  - A review of the tax and subsidy structure in the energy and transport sectors is to be undertaken in order to implement a better tax structure.



The transition to fossil fuel independence will be financed by those who use the energy. Therefore, the financing requirement will primarily be covered by households and enterprises.

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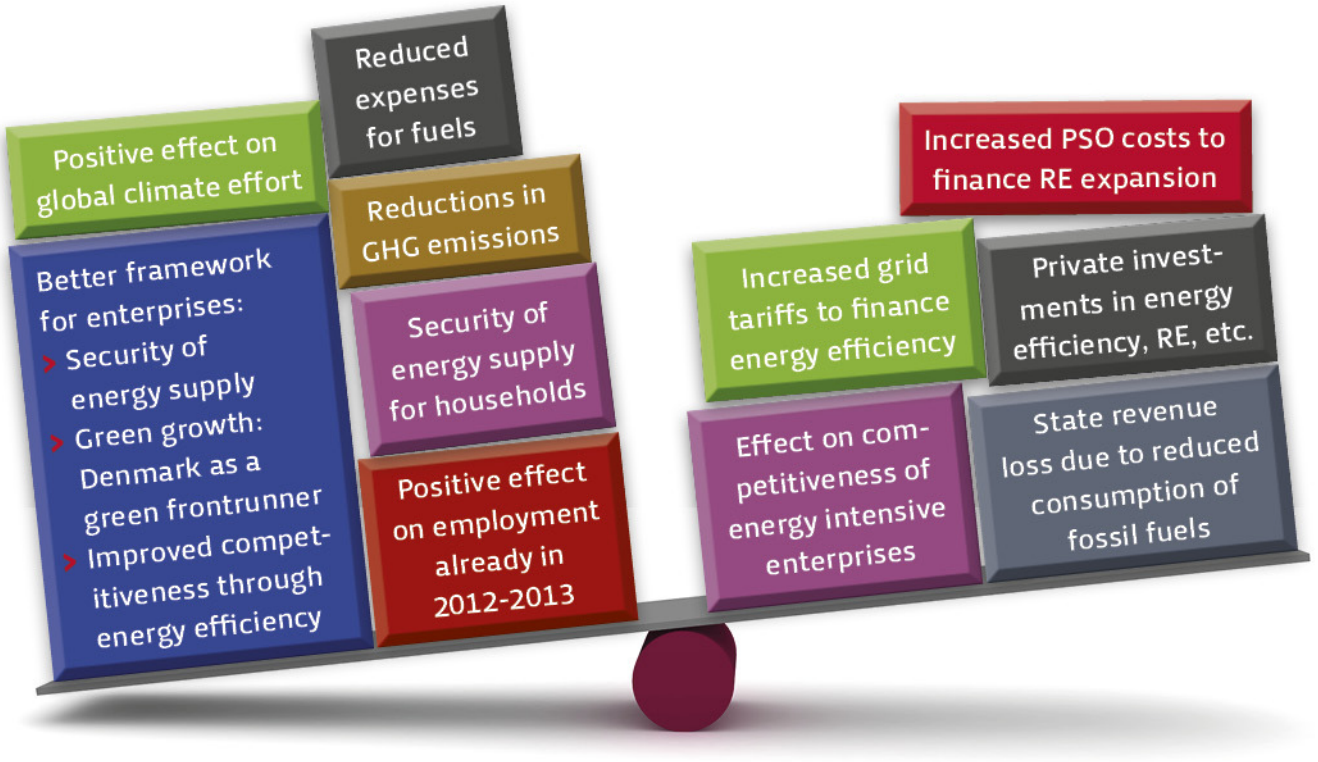

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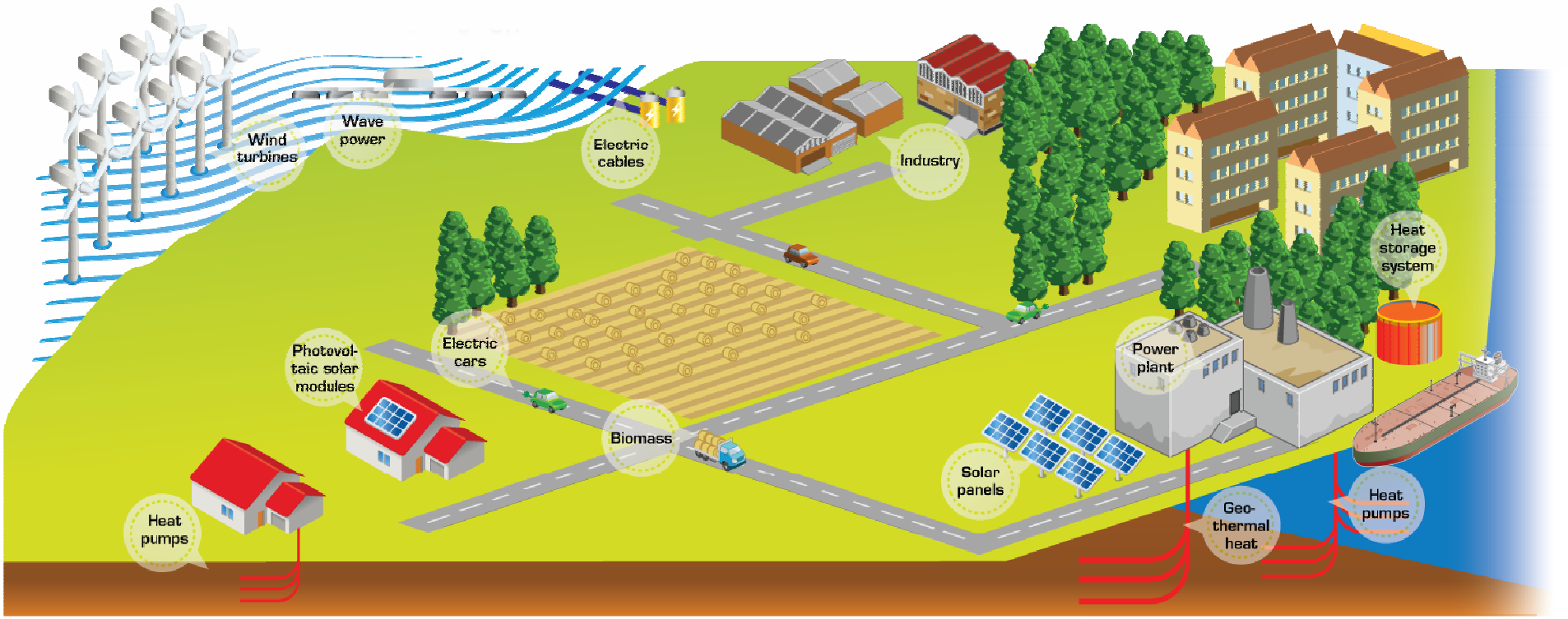
THE ENERGY SYSTEM OF THE FUTURE



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Promotion of local investments

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Thank you for your attention

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