



## Impacts of Wind Turbine Technology on theSystem Value of Wind - intro

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# Impacts of Wind Turbine Technology on the System Value of Wind

## Welcome and introduction to DTU

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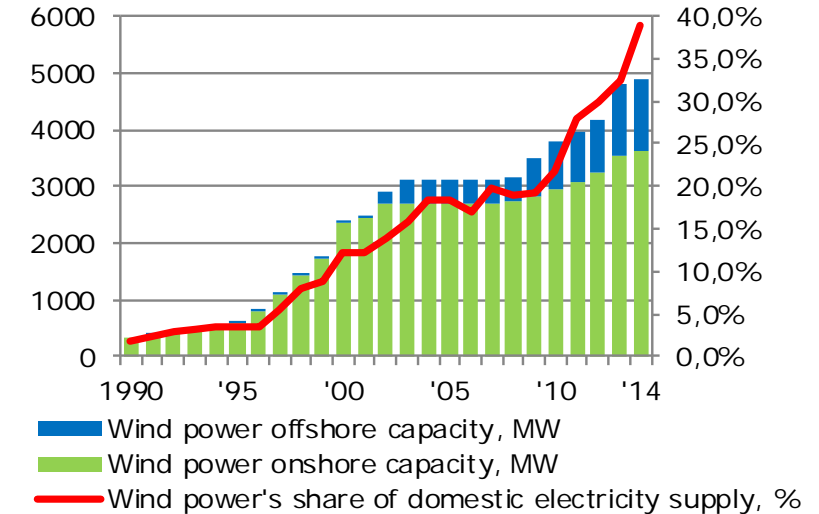


# Denmark - The country of Wind

Wind 42% share (2015).

## Political targets:

- **2020:** 50% of traditional electricity consumption covered by wind power
- **2035:** *All electricity and heat based on renewable energy (Obs. the previous governmental position)*
- **2050:** The total\* energy supply based on renewable energy  
\*Total energy system incl. heat, gas, transport, industry, etc.





Wind power: 18.000 MW turbines in 2050

- **Anholt was expensive**
  - 1,05 DKK/KWh
- **Horns Rev III**
  - 0,77 DKK/MWh
- **Vesterhav Nord + Syd**
  - 0,475 DKK/kWh
- **Kriegers Flak**
  - 0,375 DKK/kWh

# DTU Management Engineering

Systems Analysis division



Poul Erik Morthorst



Kenneth Karlsson



Klaus Skytte



Simon Bolwig



Ninette Pilgaard

- Energy Systems Analysis (ESY)

- Global and regional energy system optimisation models (all sectors)
- Integration of intermittent renewables in energy systems
- GIS preprocessing tools
- Quantitative scenario analysis

- Energy Economics and Regulation (EER)

- Analyses of regulatory frameworks and market designs that facilitate the transition towards larger share of renewable energy in the energy system, energy savings, and climate change
- Policy analysis and economic assessment
- Economic and social aspects of wind integration, coupling of markets, and flexibility options
- Demand behaviour based on technical/economic or econometric models

- Climate Change and Sustainable Development

- Modelling of climate change mitigation, renewable energy, and smart cities;
- Decision making tools for climate change impacts and adaptation

- Transport Economics

## Sister departments

**DTU Wind Energy**  
Department of Wind Energy

**DTU Energy**  
Department of Energy Conversion and Storage

**DTU Elektro**  
Institut for Elektroteknologi



Economic and social aspects of wind integration  
subprogram to EERA jp Wind



Societal and economic aspects of wind energy  
R&D focus areas



European Technology and Innovation Platform on Wind  
Energy (**ETIPWind**)

### Research projects



**Wind2050** - Multidisciplinary study on local acceptance and  
development of wind power projects



**IRENA Wind Potential Tool**



**AURES** - Auctions for Renewable Energy Support  
EU H2020



**Flex4RES** - Flexibility for Variable Renewable Energy  
Integration in the Nordic Energy System  
Nordic flagship project, 2015-2019

NSON\_dk

North Sea Offshore Network (**NSON**) project



**IEA Wind Task 26** -  
Cost of wind energy

# Welcome

