Flexibility and Grid Connectivity

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Wind share in Danish annual electricity consumption

23 December 2017: 1 hour with 139%

25 December 2017: 1 day with average of 109%

Political target 2050: The total energy supply based on renewable energy incl. heat, gas, transport, industry, etc.

District heating: 50% share of total heat supply, with 69% CHP and <1% P2H
Flexibility in the electricity infrastructure

Supply flexibility

Demand responds
Flexibility in coupled infrastructures

- Supply flexibility
- Sector coupling/Electrification
- Demand responds
Sector coupling
Electrification as source of flexibility

Distribution of EU energy consumption
(Source: EU Heating and Cooling strategy)

Large flexibility potentials in electrification of the energy sectors

Hindered by regulatory barriers

Remove barriers

Framework conditions
- Market design
- Direct regulation
- Fiscal policies
- Support schemes
- Grid regulation
Takeaways

• Large shares of wind is possible
  Policy awareness on flexibility
  Sector coupling as flexible as possible (smart)
• Remove barriers
• Improve the business case for flexible P2H/P2G

Market coupling:
• Incentives for wind and other actors to become active electricity market actors

Soft infrastructure (Regulation/economics/institutions) as important as hard infrastructure

Coherent changes in market designs, regulatory framework conditions, and coupling of markets/sectors.