

Technical University of Denmark



Wind energy and society

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Wind energy and society

Sascha T. Schröder

DTU Wind Power Day 2012 – “Optimising reliability”

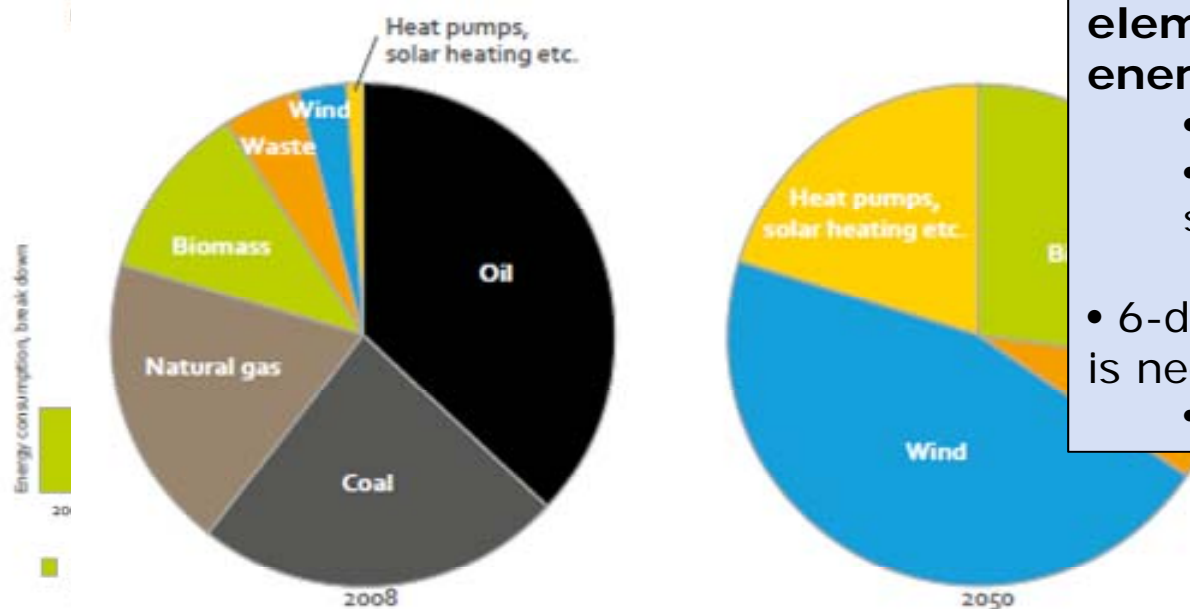
June 11th, 2012



Agenda

- “Society’s” plans for wind energy
- Wind power and the power market: the merit-order effect
- Curtailment
- Recommendations + discussion

What we need to do...



- **Wind power is a key element in the future energy system**
 - 75% of the power system
 - 45% of total energy system
- 6-doubling of wind capacity is needed
 - Most will be offshore

Source: Climate Commission

Wind power and the power market

- in Denmark, there are incentives for good wind forecasts and optimising generation in relation to power market signals, if possible
- this does not hold for other markets, e.g. feed-in tariff generation in Germany

Elspot market overview

11-06-2012 Resolution 11 - 12 Currency DKK
 Capacities Flow Area Prices
 ITVC ITVC

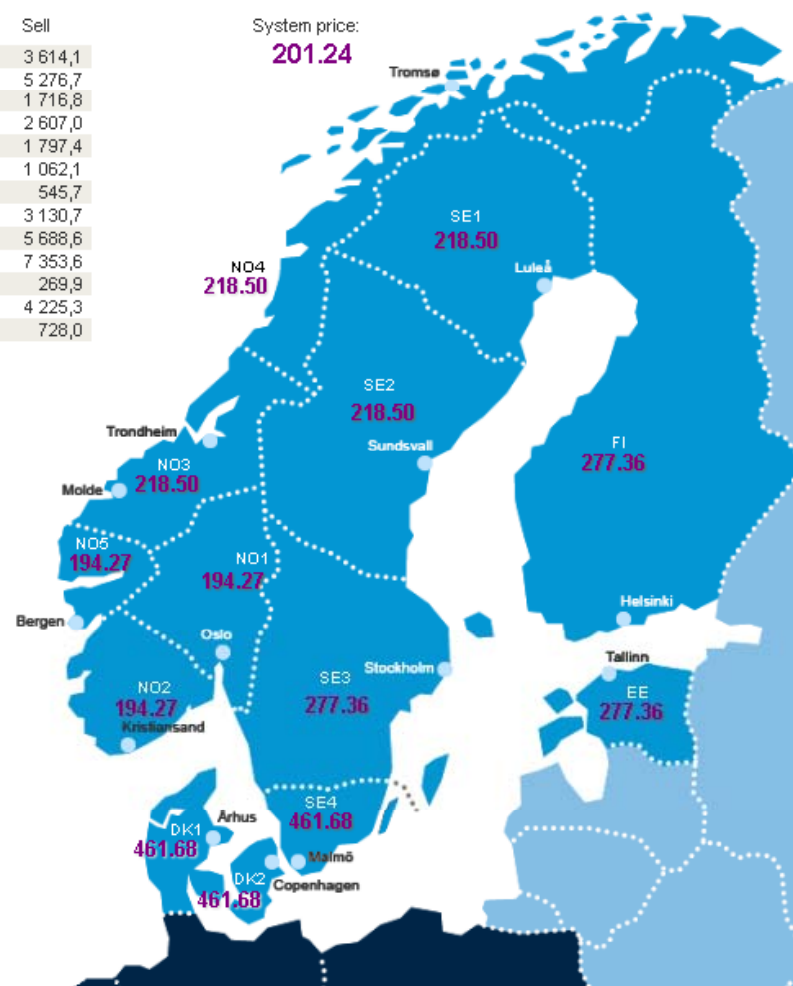
Elspot volumes

Preliminary prices in purple

	Buy	Sell
NO1	3 182,9	3 614,1
NO2	3 557,0	5 276,7
NO3	1 867,0	1 716,8
NO4	1 726,1	2 607,0
NO5	1 123,3	1 797,4
DK1	2 472,1	1 062,1
DK2	1 675,6	545,7
SE1	1 087,4	3 130,7
SE2	1 462,6	5 688,6
SE3	9 701,0	7 353,6
SE4	3 440,0	269,9
FI	5 914,7	4 225,3
EE	806,2	728,0

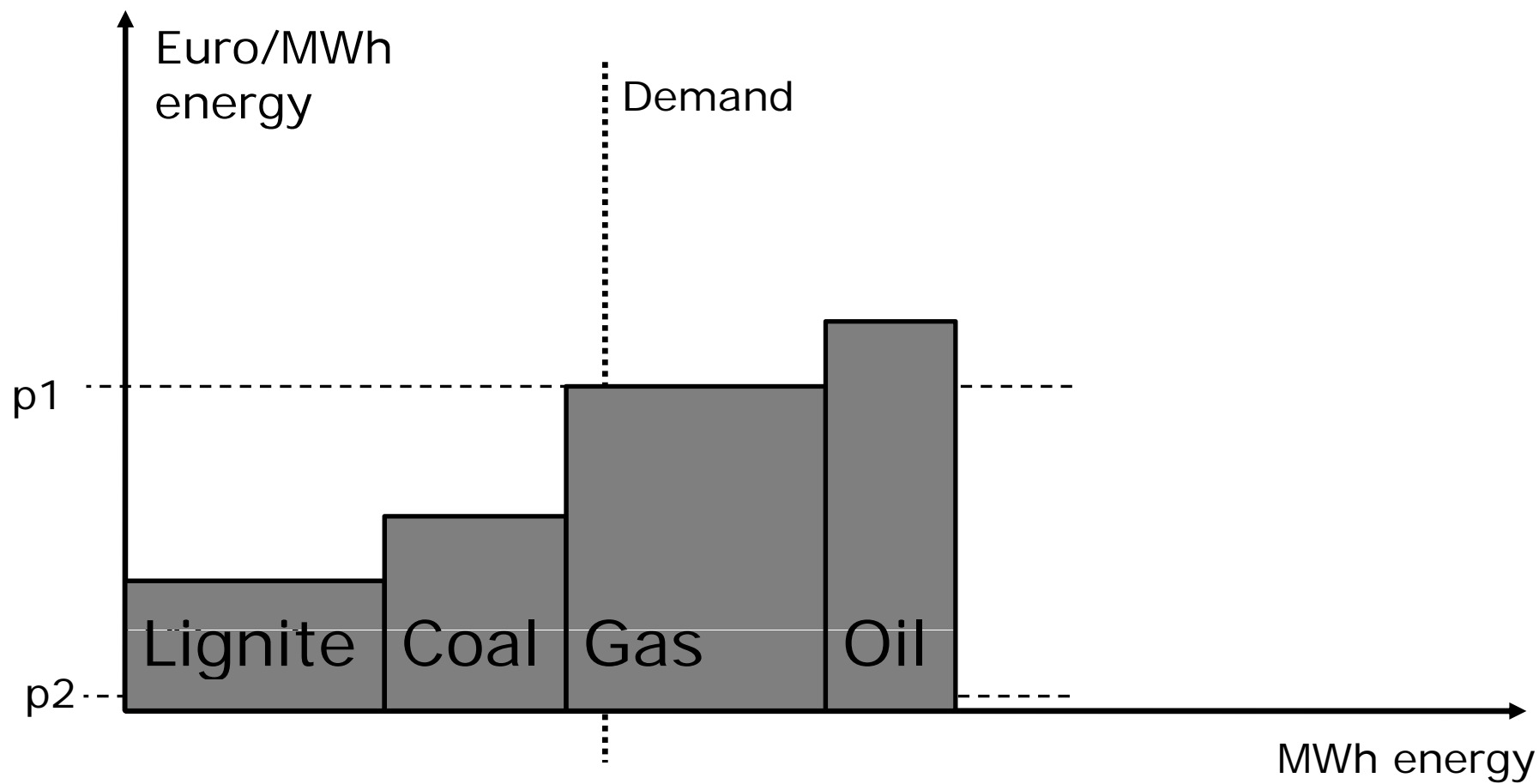
System price:

201.24



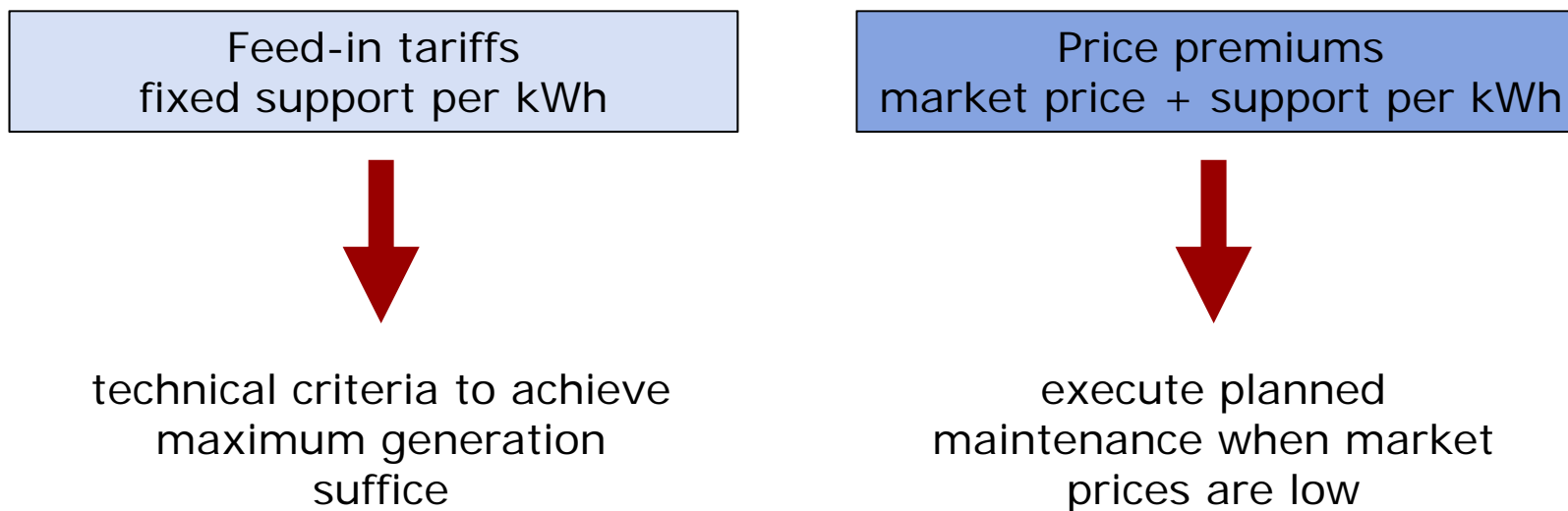
Source: Nord Pool Spot

The merit-order effect I



The merit-order effect II

- Short-run effect: gross power prices are reduced
- this tends to compensate for given support



Curtailment

Voluntary due to
power market signals



identical for all units of a
balancing-responsible party
in a power market area

Involuntary due to
network constraints



Local effect
Compensation?

Recommendations + discussion

- Optimising reliability
 - do not only focus on technical reliability, but on the value of wind power in different markets!
 - ... and adjust maintenance contracts accordingly to set incentives for improved planned maintenance scheduling
- impacts from
 - support scheme
 - power prices
 - curtailment



Thank you for your attention!

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