

# The Nordic Electricity Market

Workshop on Transmission Access, Investment  
and Pricing  
London, 23<sup>th</sup> October 2007

By Hans Henrik Lindboe

Ea Energy Analyses

[www.eaea.dk](http://www.eaea.dk)

# Nordel

## Organization for Nordic TSO's

- Five countries
- Four are interconnected
- Three  $\frac{1}{2}$  are synchronous
- 400 TWh/year



# Nordel

## Organization for Nordic TSO's

- System operation
- Grid development
- Market development
- Codes for operation, connection and planning
  - Wind connection code launched this year



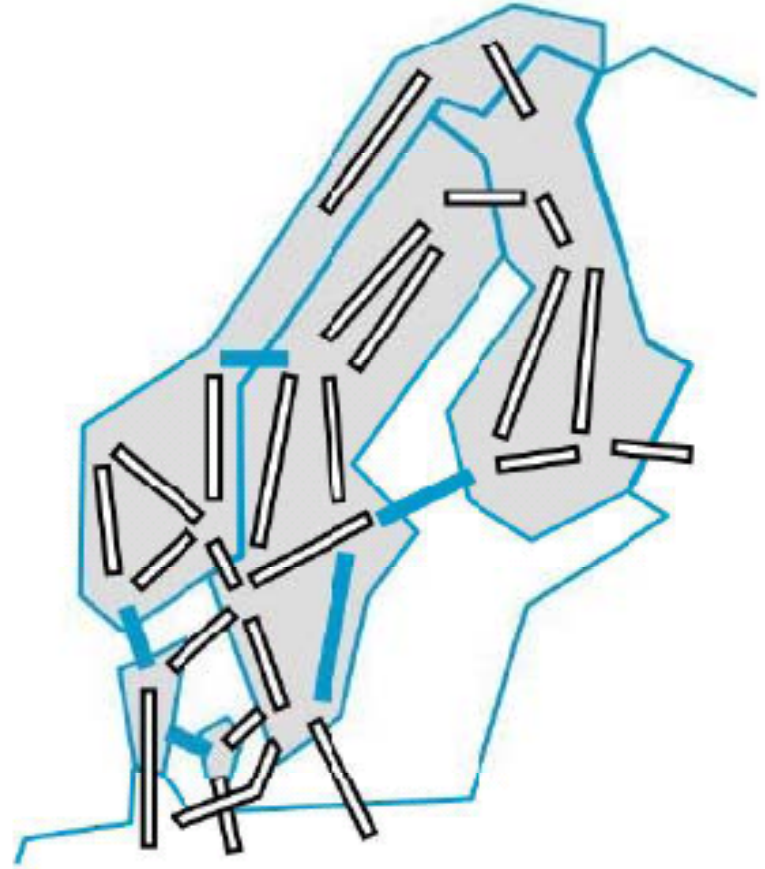
# Grid access

- TSO's must give access to applicants who comply with the connection code.
- TSO's undertake necessary grid investments
- Actors pay tariff for use of grid. Tariff can be a combination of capacity and energy.
- Tariffs depend on location
  - In Sweden the difference between far North and far South is about 2£/kW/year
- Consumers pay the larger part of grid costs

# Grid development

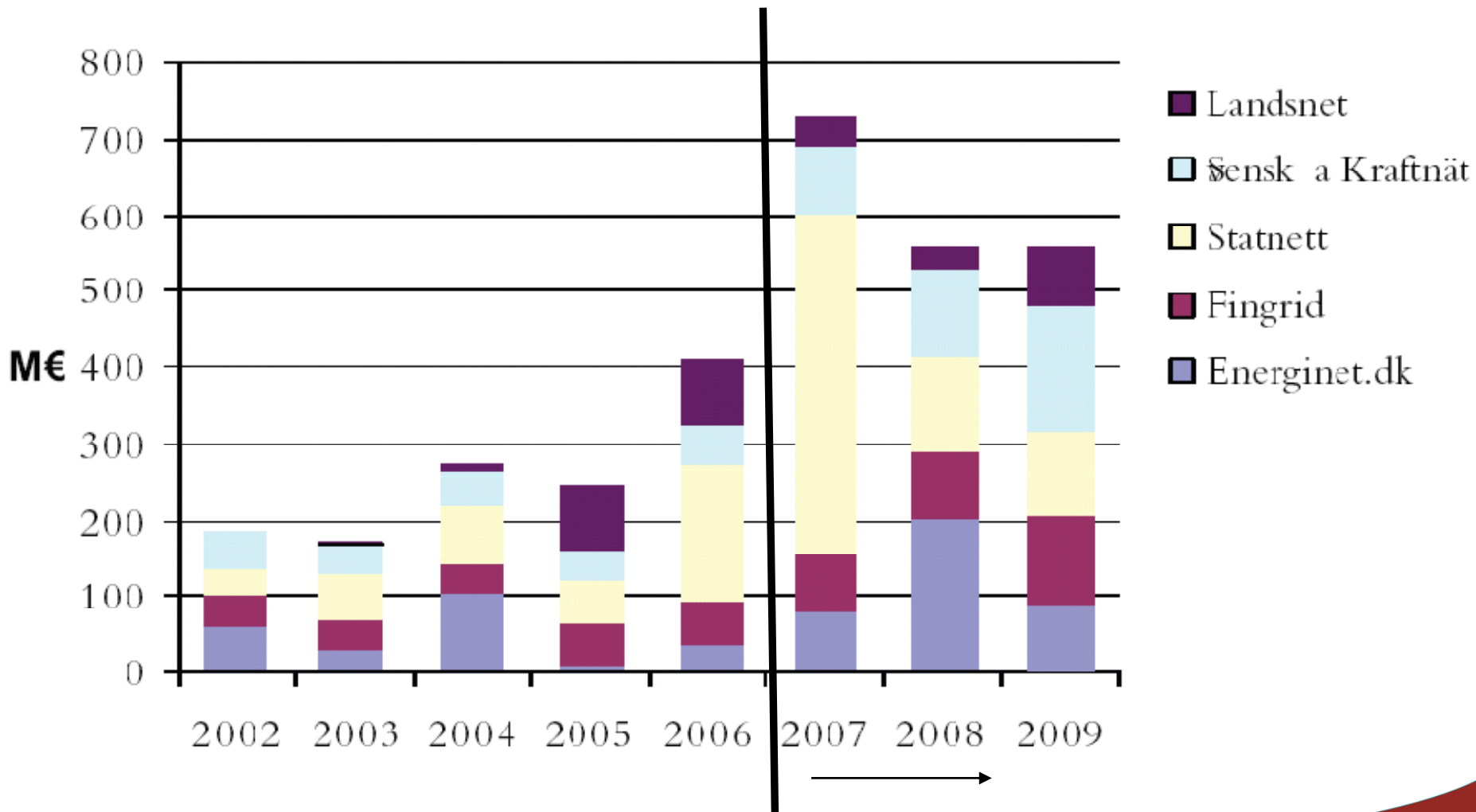
## 5 Prioritised cross sections

- Plan developed and recommended by Nordel
- Nordic socio economy
- 1 bn €
- Plan for common financing (congestion rent).
- National approval and bilateral financing



# Grid investments 2002-09

Source: Nordel 2006



# Nordel strategic projects

Presented to Nordic Ministers

- More efficient functioning of the market
  - Push for implementation of 5 prioritised cross sections
  - Publish new grid plan in january 2008 with next package of grid investments
  - **Propose common principles for congestion magement by end 2008**
- Better integration with other markets
- Better planning processes
- Better co-operation with neighbouring TSO's

# Nordpool exchange

Owned by the TSO's

- Day ahead market (Spot)
- Intraday (Elbas)
- Regulating in real-time is handled by TSO's
- TSO's deliver trade capacities to Nordpool daily
  
- The main market philosophy is:
  - Market splitting to handle structural congestion
  - Counter trade to handle random congestion
  
- But practice is somewhat different



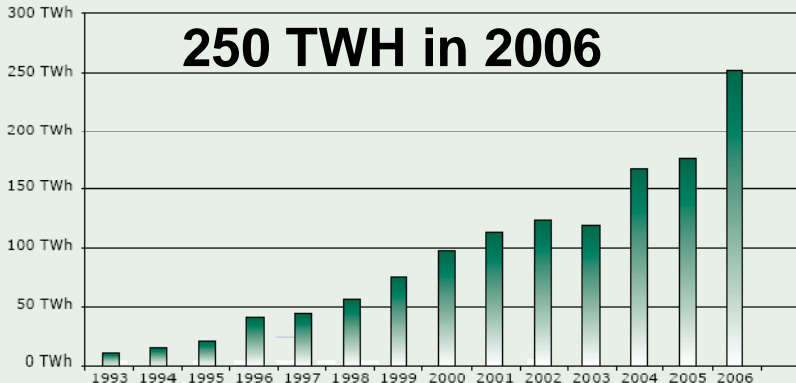
# Norpool

## Nordic Power exchange

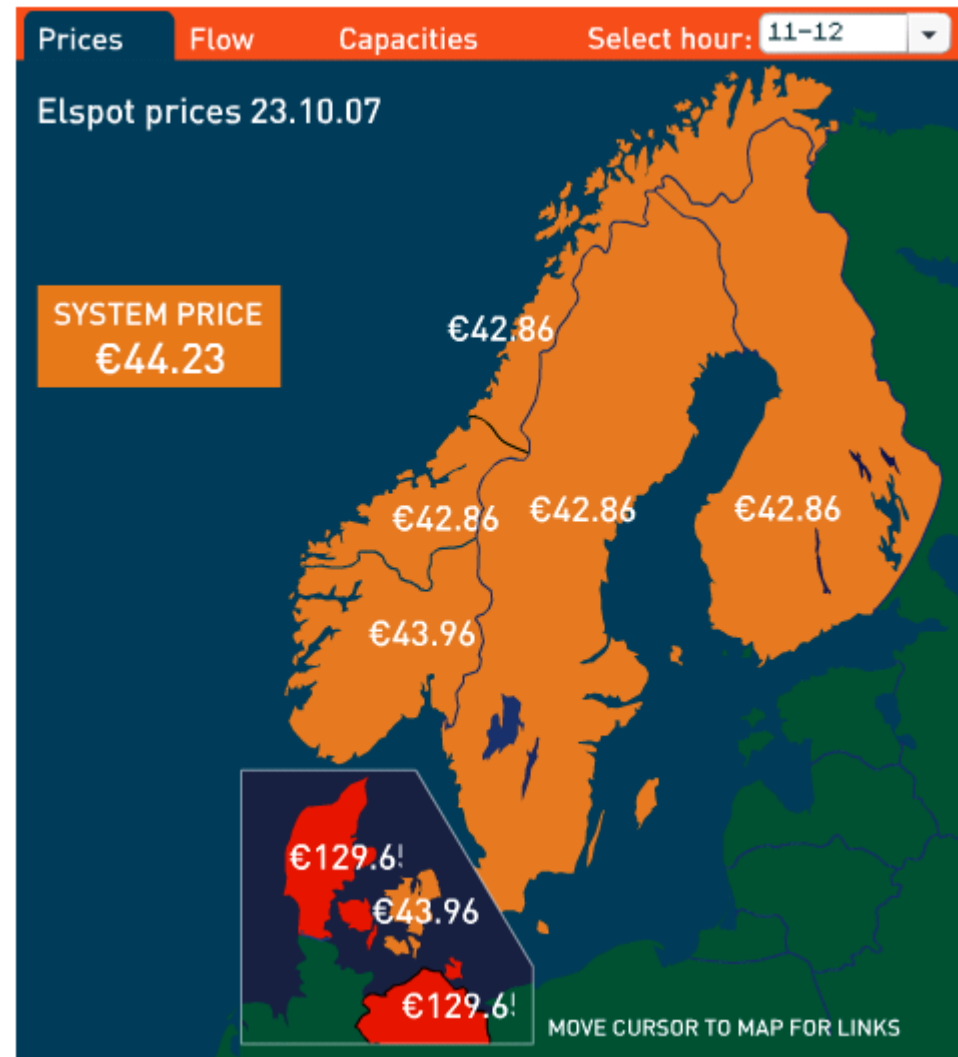
- Seven or more bidding areas
- All trade between bidding areas must be handled by Nordpool

Nord Pool Spot traded volumes 1993 - 2006

**250 TWh in 2006**



# Spot prices 23.10.07



# Observations and conclusions(1)

- Congestions in the Nordel area are transparent in the market
  - Except for internal congestion within bidding areas
- The grid is used efficiently with market splitting.
- Market splitting gives more volatile prices, and shows the real marginal costs to consumers. This is an incentive for DR as peak load

# Observations and conclusions (2)

- Congestions are quite frequent, and congestion rents are in the order of 50 -100 €/year. This is probably a reasonably efficient congestion level.
- Producers have a tendency to wish for a "Copper plate". This is not good economics.
- Congestion rents gives a "perverse" incentive for grid investments. Investment decisions must be based on socio economic analyses