

CO₂-free electricity by 2020? A widened power market in Northern Europe?

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The electricity sector

Opportunities

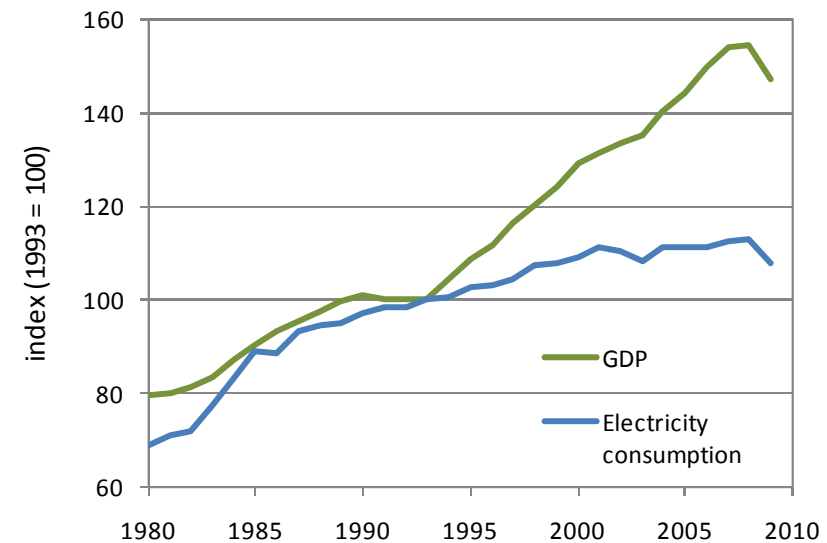
- Nordic electricity exports help other countries reduce their CO₂ emissions
 - Makes it cheaper to reach a given EU emission cap
- CO₂ free electricity in the Nordic area can become a mean to reduce the use of fossil fuels in other sectors

Challenges

- Balanced and cost effective development requires coordinated actions?

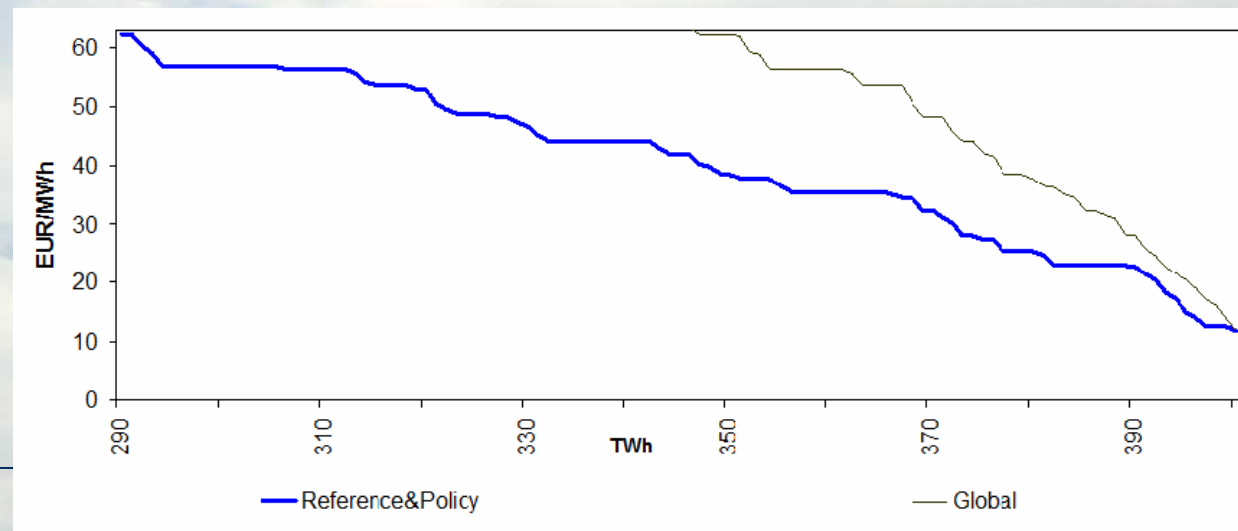
Electricity demand is flattening out

- **Electricity intensive industry**
 - Does not have the comparative advantage it used to have
- **Electric heating**
 - is still competitive but heat pumps are increasing the efficiency
- **Energy efficiency goals and policies**



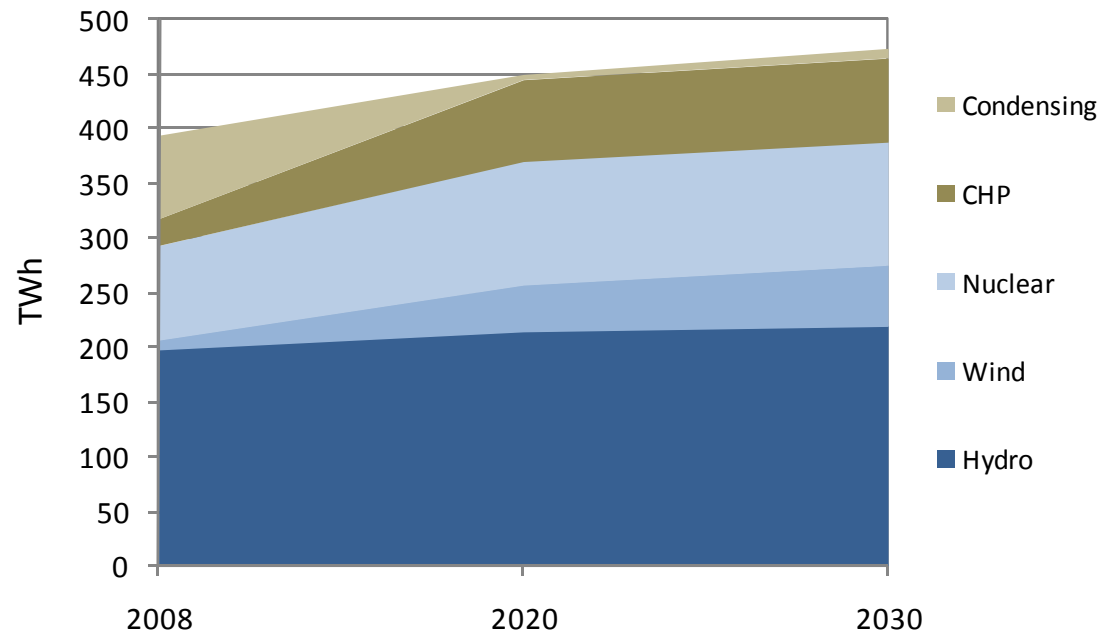
Other trends

- **New applications for electricity**
 - Electric cars
 - Electric boilers in district heating



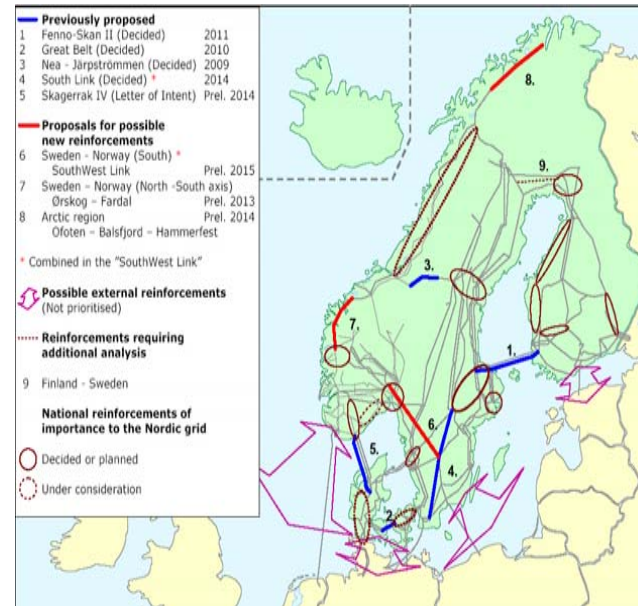
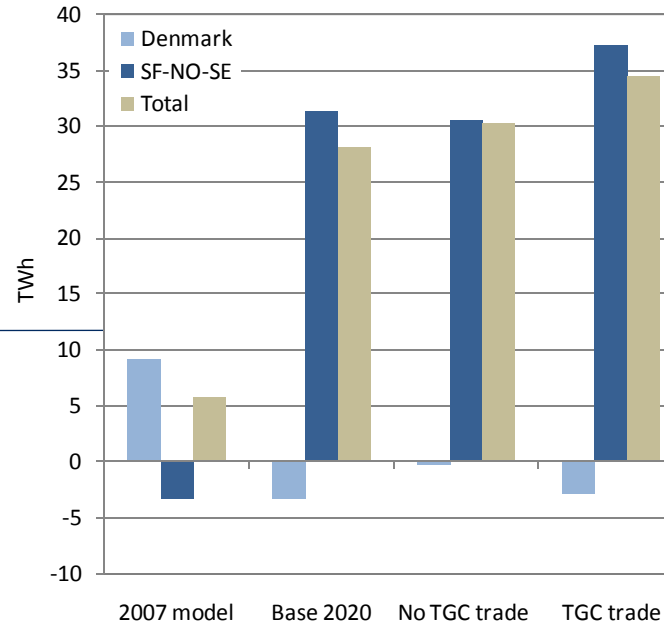
CO2 free generation is growing

- **Renewable +50-60 TWh**
 - Major part wind
- **Nuclear +25 TWh**
 - Increased capacity in Sweden
 - 5th reactor in Finland
- **Reduced fossil – XX?**
 - We will still need fossil fuel power plants
 - Dry years
 - When the wind is not blowing
 - Capacity reserves



Export opportunities

- **Maximal export today approx. 20 TWh/year**
- **Possible to increase by approximately 10 TWh by 2020**
 - Reinforcements within the Nordic area
 - New cables
 - Reinforcement within Germany and Poland
- **Model results indicate around 30 TWh export**

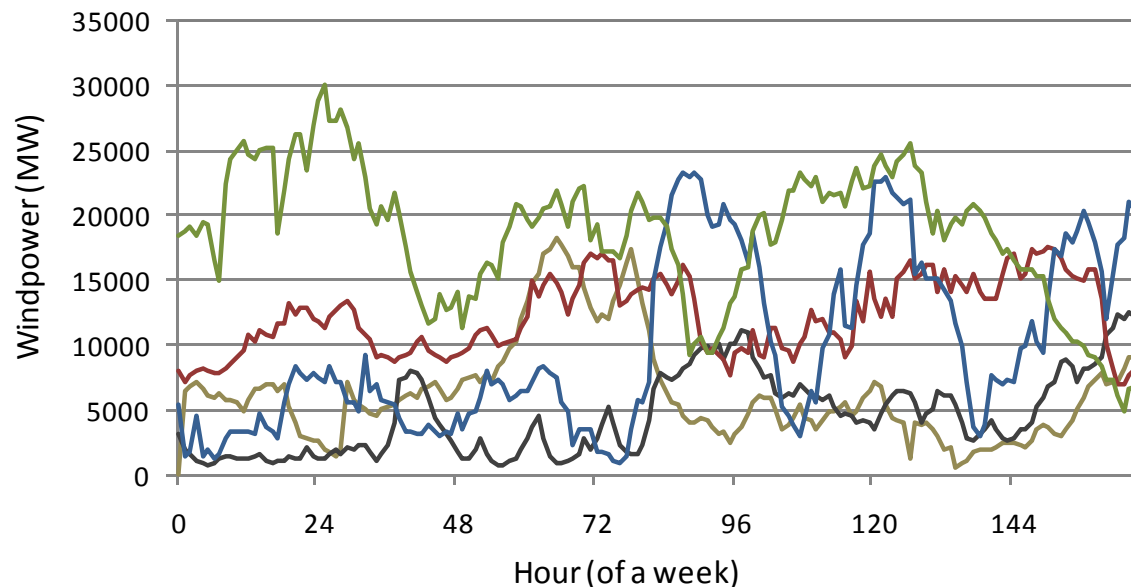


To summarize

- a ten year perspective on the Nordic electricity market

- Slow demand growth, new renewable electricity and new nuclear will give a strong electricity balance
- The present situation with a reasonably balanced trade with neighboring areas will turn into an export situation, driven by relatively low prices.
- Fossil fuel power plants are likely to be closed due to expected low utilization time – but some will still be needed
- Possible large volumes of wind power will create more volatile prices

Estimated wind production
Approx. 70-80 TWh
wind/year



Things to discuss

- **What is the best use of the electricity “surplus” we may get in the Nordic area?**
 - Increased export
 - + It may help the rest of Europe to reduce the cost for electricity generation, reducing CO2 emissions and increasing security of supply
 - + Create export revenues to the Nordic countries
 - Create a need for large investments in new transmission lines
 - Increase the Nordic demand for electricity
 - + Cost effective mean to reduce CO2 emissions outside the trading sector
 - + Strengthen the industry in the Nordic area through competitive electricity prices
 - May interfere with the energy conservation goals
- **Is almost CO2 free electricity good enough?**
- **What measures can we take to regulate the electricity system with large volumes wind power**