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THE OXFORD INSTITUTE FOR ENERGY STUDIES

UNIVERSITY OF OXFORD

Eeekonomics: BEG/CEE-UT Annual Meeting

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Commentary: European Live Issues, Post-recession Demand

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European gas demand post Fukushima

Outline

- **2008-2011 trends in Europe**
- **Reactions to the Fukushima incident**
- **Focus on Germany**

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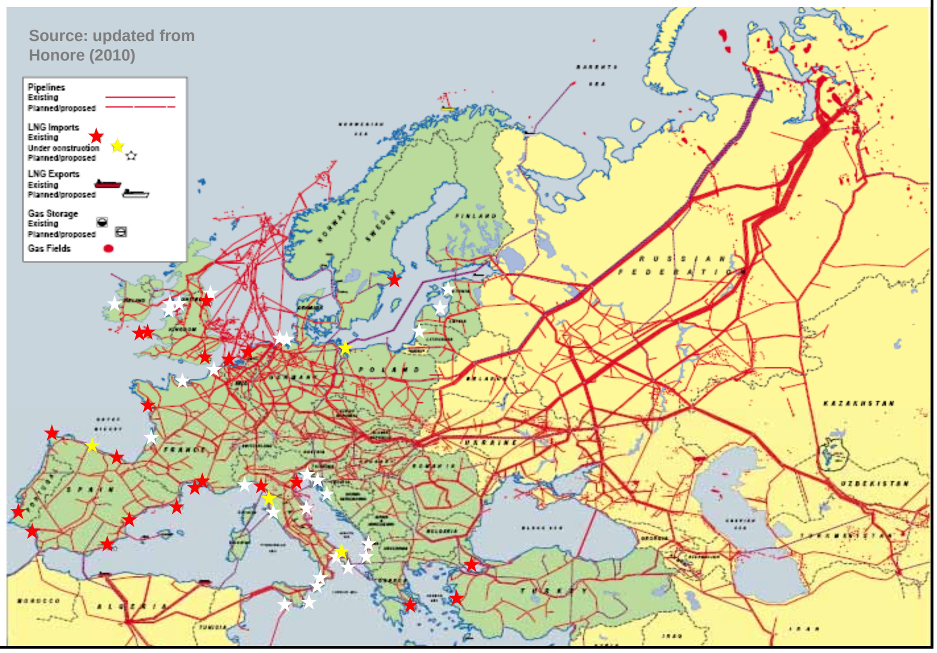
European natural gas market: 590 bcm



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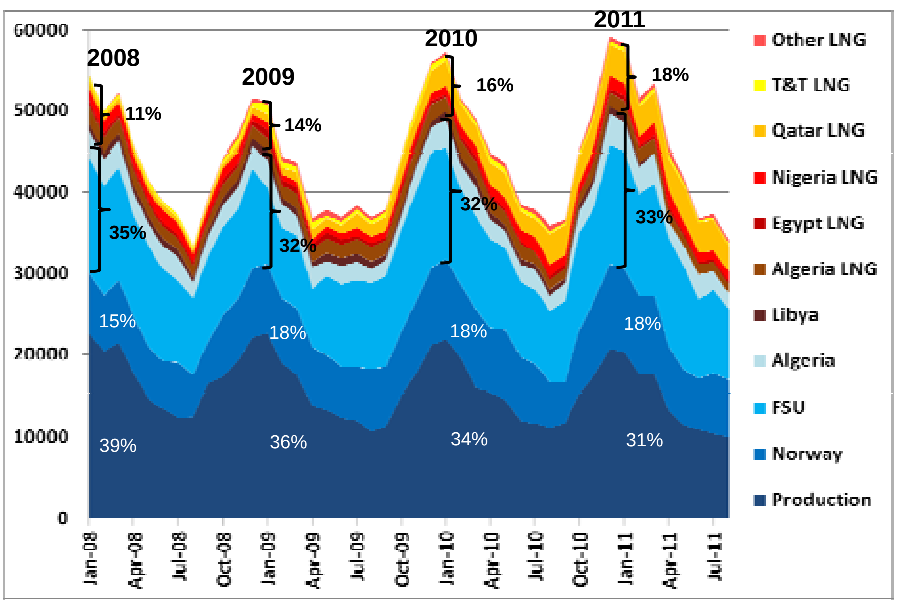
Supply to Europe 2008-2011 (mcm)



OECD Europe, Source: IEA and Waterbone LNG

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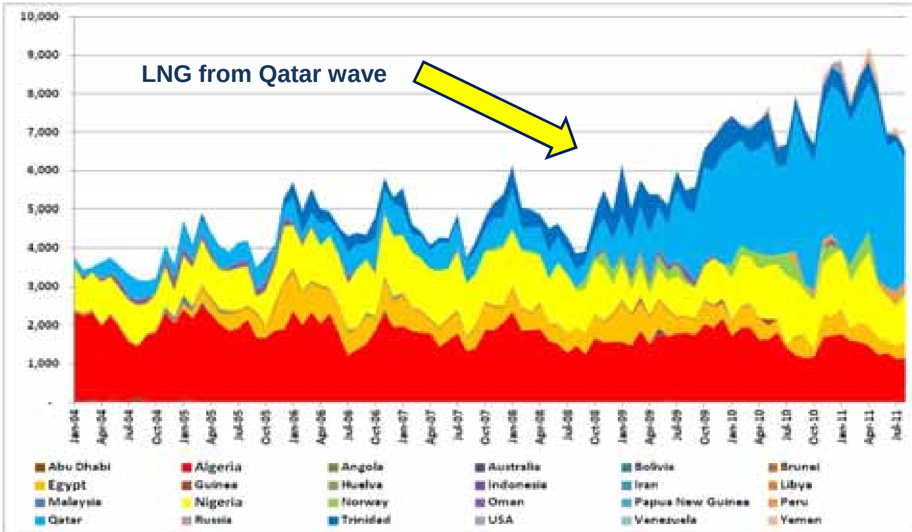
LNG imports to Europe from origin (mcm)

First 3Q 2011: 48% from Qatar, 18% from Nigeria, 18% from Algeria, 7% from Egypt 4% from Trinidad and 3% from others



Source: Waterbone LNG

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LNG deliveries to Europe, 2008-2011

- **In 2009, -5.6% in gas demand, additional LNG imports absorbed by:**
  - Lower domestic production, primarily in the UK
  - Lower pipeline imports (mostly Russia)
- **In 2010, +7.5% in gas demand, LNG imports continued to increase, domestic production and pipeline imports only partially recovered lost volumes in 2009**
  - Net imports: +8.8%, LNG imports: +27% (+18 bcm)
  - All but one (Spain) countries imported more LNG in 2010 than in 2008
  - Demand recovered due to cold winters (Jan-Feb and Nov-Dec 2010) but also economic recovery and coal to gas switching (~ +4% temperature-corrected)
- **In 2011, LNG to Europe at unprecedented high level, with the market absorbing flexible supplies, at least before the impacts of the 11th March 2011 in Japan**

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On the supply side…

- Qatar's share in western Europe's LNG market grew from 29% in 2009, 42% in 2010 and 48% in 2011
- Impact felt by competing producers although partly offset by demand recovery
- LNG from MENA was especially hit
  - Some losses can be explained by diversions to higher-paying markets
  - But a large part of the reduction relates to the diversion of gas from LNG export to domestic markets and maintenance at export facilities
- Resurgence of Nigerian production in 2010-2011
- Asian demand (pre- and post-Fukushima) => 2011: tighter LNG market than anticipated

Source: GLM 2011, 7.08, p.14

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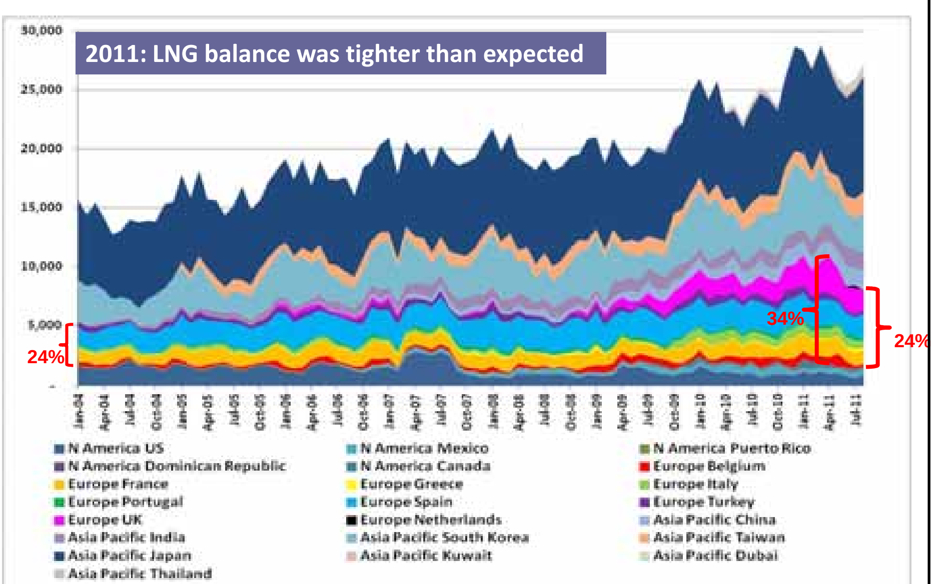
LNG deliveries, 2004-2011 (mcm)

24% of world LNG volumes to Europe in August 2011 (34% in April 2011)



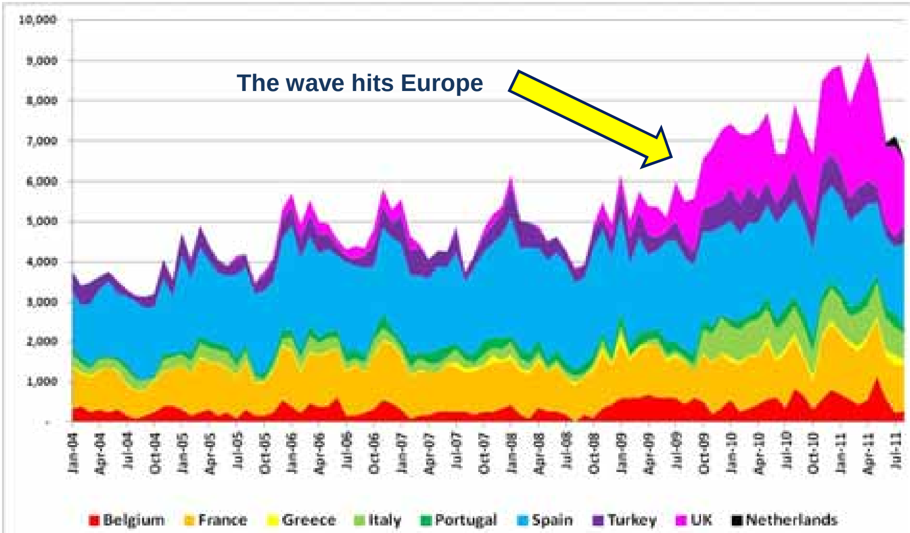
Source: Waterbone LNG

LNG deliveries to Europe, 2004-2011 (mcm)

UK: 1st LNG importer in Europe, before Spain for the first 3Q of 2011

UK: 30%, Spain: 25%, France: 16%, Italy: 10%, Belgium: 7%, Turkey 6%, Others:6%

(Short term and spot imports have tripled between 2008 and 2010)



Source: Waterbone LNG

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LNG flows in the UK: rapid expansion since 2009

- UK is well placed to benefit from the increase in volume of un-contracted LNG given its excess regas capacity
- South Hook with its Qatar gas is providing regular supplies
- Isle of Grain and Dragon are supplied by many spot cargoes
- => <u>Transit country</u> for LNG in North West Europe
  - 2010, the UK imported 55 bcm of gas, 1/3 in the form of LNG, and exported more than 16 bcm through the IUK
- Almost 80% of 15 bcm of LNG to the UK was imported from Qatar in 1H 2011
  - Most of the LNG to the UK from Qatar is contracted either on long-term basis to South Hook or on medium term basis to Centrica at the Isle of Grain (NBP priced)
  - These contracts are flexible and allow diversion to higher-valued markets

Sources: GLM 2011, 7.08, p.14 and LNGBR, May 2011, p.17, LNGBR October 2011, pp.23-27

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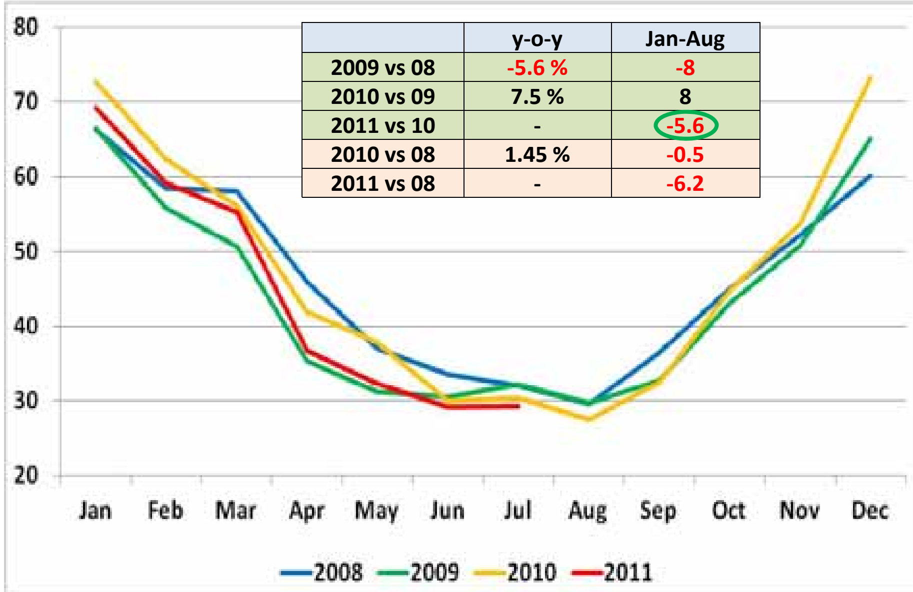
Is gas demand recovering???



	y-o-y	Jan-Aug
2009 vs 08	-5.6 %	-8
2010 vs 09	7.5 %	8
2011 vs 10	-	-5.6
2010 vs 08	1.45 %	-0.5
2011 vs 08	-	-6.2

OECD Europe, Source: IEA

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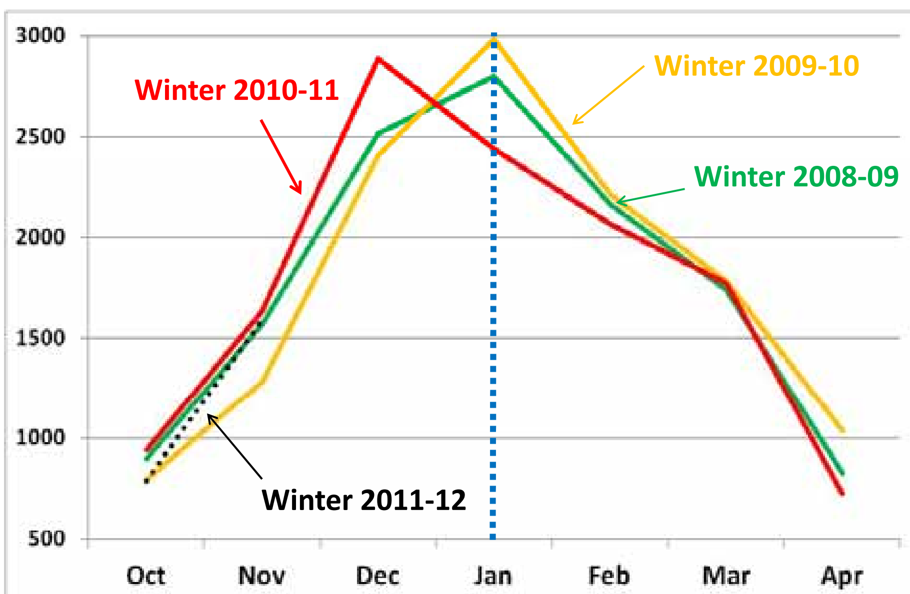
Very cold temperatures in 2010



HDD in 7 major gas markets, calculated from weather underground data

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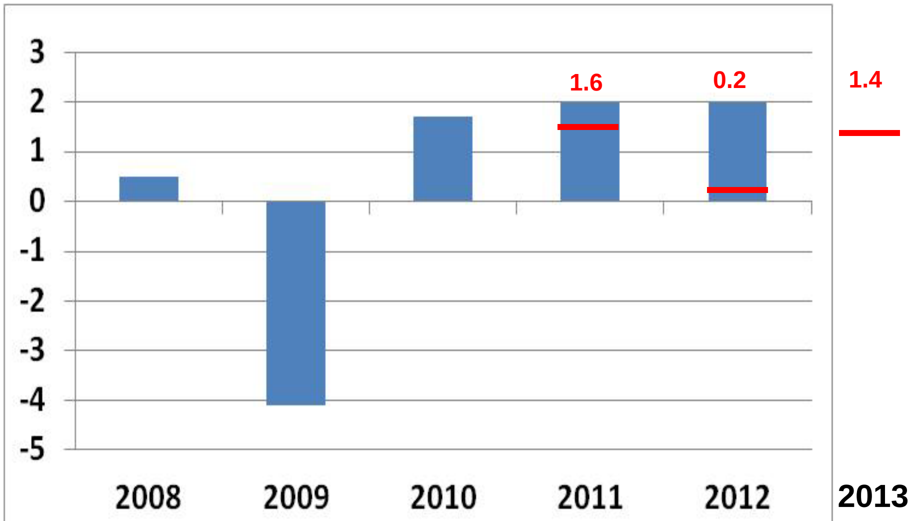
Real GDP - % change from previous year



OECD, 28 Nov. 2011 & OECD, May 2011

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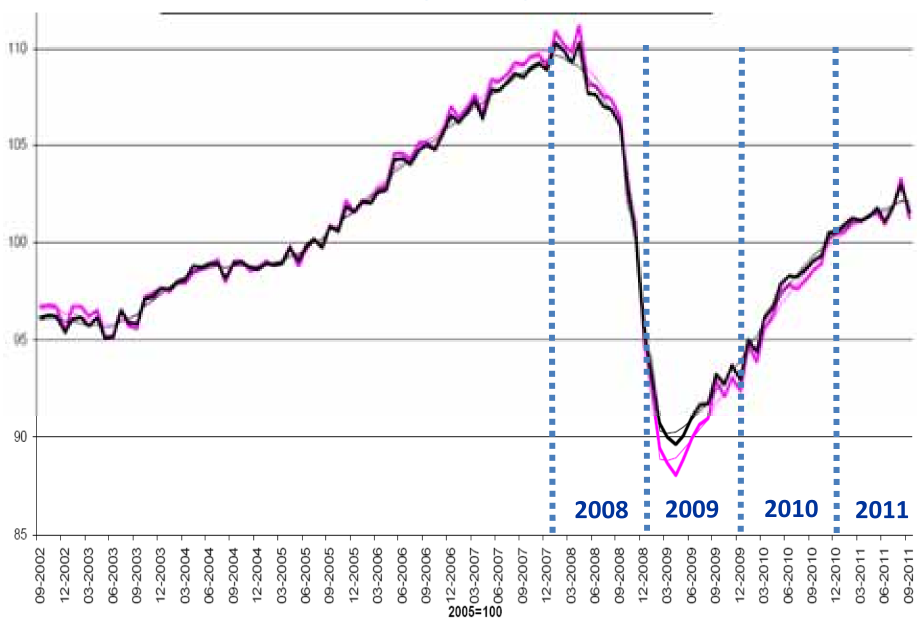
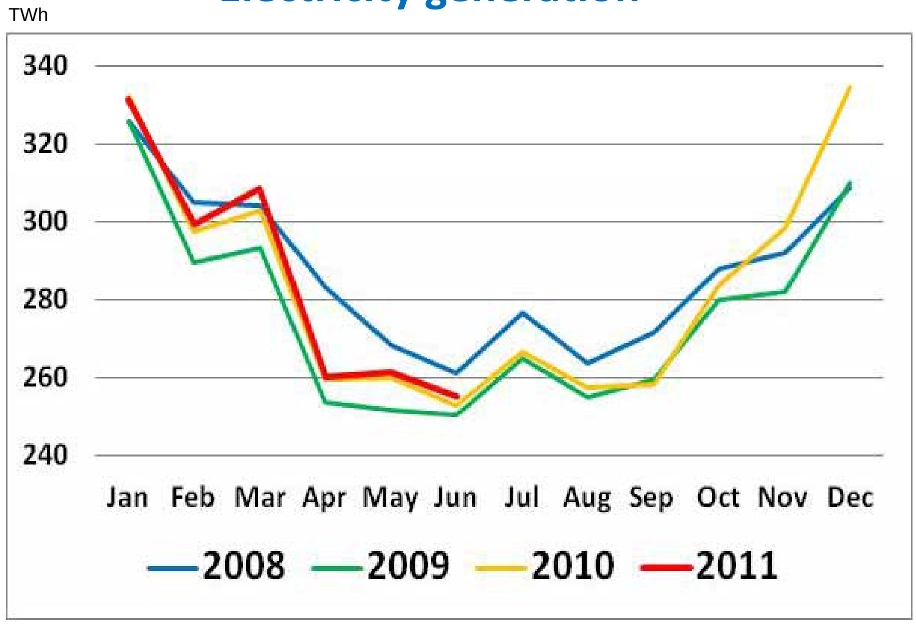
Industry output



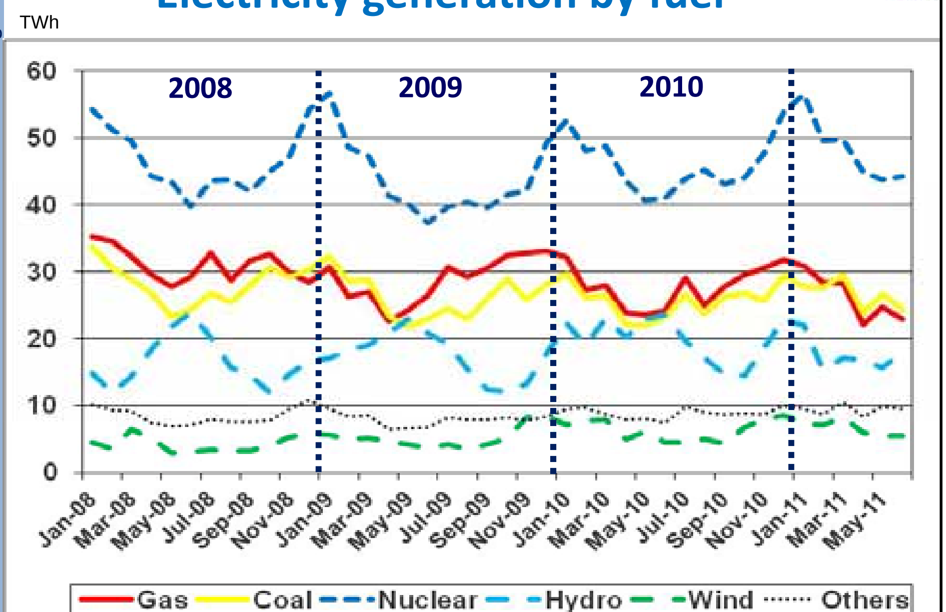
European union, Source: Eurostat

Electricity generation



OECD Europe, Source: IEA

Electricity generation by fuel



Main European markets, Source: ENTSOE

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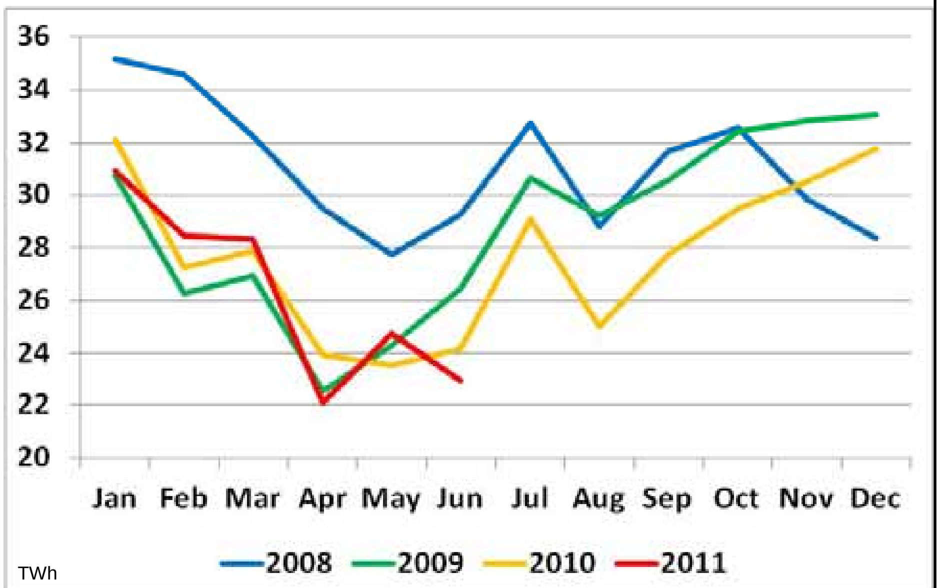
Electricity generation from natural gas



Main European markets, Source: ENTSOE

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Demand trends in Europe...

- **Slow gas demand recovery**
  - Possible exceptions: cold winters (+10-15 bcm)
- **Electricity demand in not back to sustain growth**
  - Limited growth expected due to economic situation + efficiency measures
- **=> Gas for power: possible limited growth in the near term (2015)**
  - Transition or destination fuel ? Baseload or mostly back up for intermittent generation?
- **Since March 2011, additional uncertainty on the future of nuclear energy in Europe**

Nuclear energy before Fukushima

- 3 major accidents of nuclear power
  - Three Mile Island (USA, 1979)
  - Chernobyl (Ukraine, 1986)
  - Fukushima (Japan, 2011)
- Reactions to past catastrophes in Europe
  - Sweden, Spain, Italy, Germany, Switzerland...
- Past experiences show that after some time, policies can be revised
- Nuclear renaissance since the mid-2000s
  - Nuclear power = security of supply and zero carbon emission

2011: diversified reactions in Europe 1/

- Strongest reaction in Germany
  - Phase out nuclear plants by 2022
  - 8 GW already shut down in March
- Some countries have decided to put a date on the phase out of nuclear energy
  - Switzerland: 2034
  - Spain: 2028
  - Belgium: 2025
- Public opinion against NEW nuclear power
  - Italy : 94% NO
  - Sweden

2011: diversified reactions in Europe 2/

- Other countries have decided to continue their nuclear programmes
  - France
  - Finland
  - Netherland
  - UK
  - Central and Eastern Europe
- => Only a small number of new plants likely to come on stream in this and maybe next decade
  - => Without even considering impacts of post Fukushima

New dynamics for nuclear energy

- OLD PLANTS:
  - Limitations of life-time (60 years, 40 years or shorter)...
  - ... Possibly as a result of the cost of stricter safety standards
- NEW PLANTS:
  - Cost and construction of new EPR: problems even before Fukushima
- Questions on the competitiveness of both old and new nuclear plants
- => New dynamics not in favour of a rapid nuclear renaissance in Europe, certainly not at a cheap price

Impacts on energy policies towards a low carbon economy

- Before the Fukushima accident
  - Renewables + nuclear (+ CCS?)
  - Gas as the transition fuel
- Post Fukushima: too early to have new policies, but:
  - Nuclear energy is uncertain: political restriction or economic constraints
  - Hydro: environmental constraints
  - Renewable energy: baseload energy ? Impacts of downward revisions of FIT and other support schemes?
  - If CCS does not develop, question mark on the impacts for coal but also for gas

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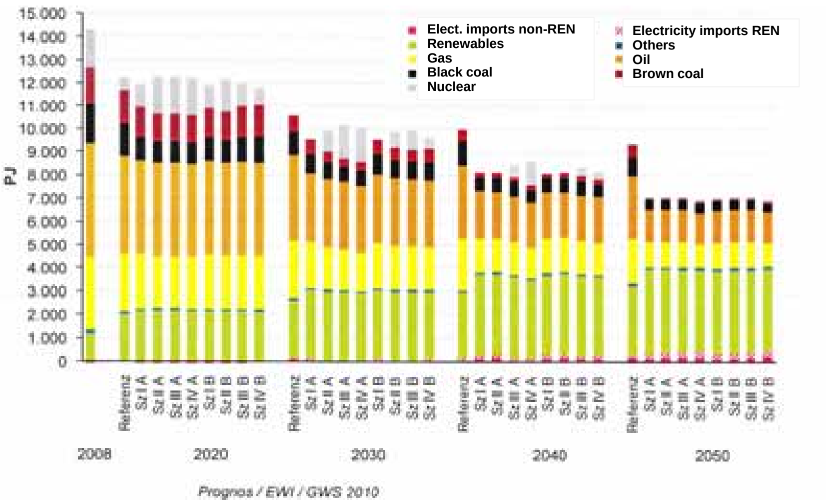
Germany's 'national energy concept' to 2050 (28 Sept 2010)

- First comprehensive energy policy in 30 years
- "Path to the renewable energies era" => period: 2010-2050
  - GHG emissions: -40% to 2020, at least -80% by 2050 compared with 1990
  - Renewables : 35% of gross electricity consumption by 2020, 50% by 2030, 65% by 2040 and 80% by 2050
  - Wind energy to play a "decisive" role in electric supply in 2050
  - Nuclear plant run times are extended
  - Expansion of electricity networks of "central significance"
- Many criticism from environmental and political groups

Germany: New Energy Concept 2010

=> 2020, not much change for gas, but sharp decline possible afterwards

TPES in Germany by fuel source, from various scenarios



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Impacts of the German nuclear phase-out on electricity generation and gas demand are yet unclear

- **Short term (2015):**
  - German had an overcapacity
  - No need of import this winter (government)
  - Possible problems in neighbouring countries
- **Mid term (2020-2025):**
  - To replace nuclear: many scenarios (Merkel: 10 GW of wind and solar + 10 GW of new gas plants + efficiency, Others: between 6 and 20 GW of new coal and gas plants)
  - Higher price for electricity
- **Long term:**
  - 2030s/2040s: old scenarios had planned for nuclear phase-out
  - Emphasis on efficiency measures… and imports ???

Thank you

http://www.oxfordenergy.org/gasprog.shtml