

Gas and coal competition in the EU power sector

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Outline

- ❑ **Objectives and Contents of the Report**
- ❑ **Main findings**
- ❑ **State of play of gas and coal competition in the EU power sector**
 - **The European paradox**
- ❑ **Main causes of the European paradox**
 - **European and international developments**
- ❑ **Consequences**
 - **None of the EU climate and energy objectives are met**
- ❑ **Coal renaissance in the EU?**
- ❑ **Conclusion: Gas and Coal contest**



Objectives and Contents



Two main objectives:

- ❑ To analyse competition between gas and coal in the EU power sector (coal renaissance?)
- ❑ To draw conclusions for future gas demand by the power sector

Objectives and Contents



Contents: Five Chapters

- EU electricity market
- Gas prices in Europe
- Coal prices
- The EU CO2 market
- Gas and coal competition in the future

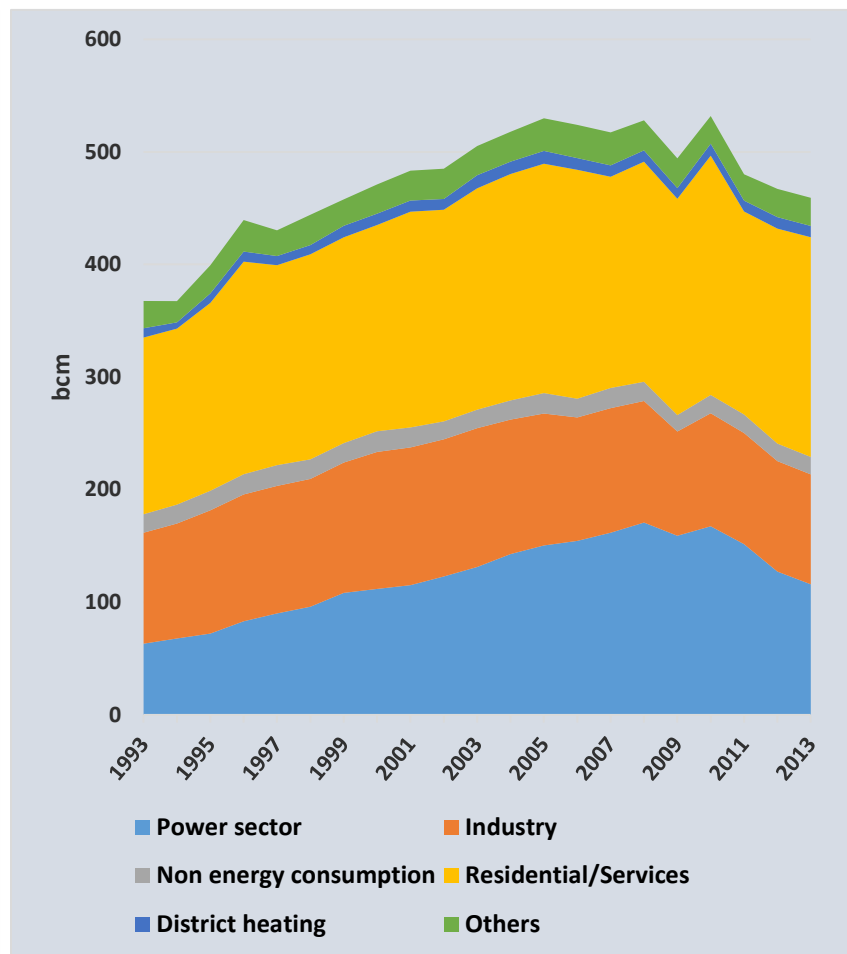
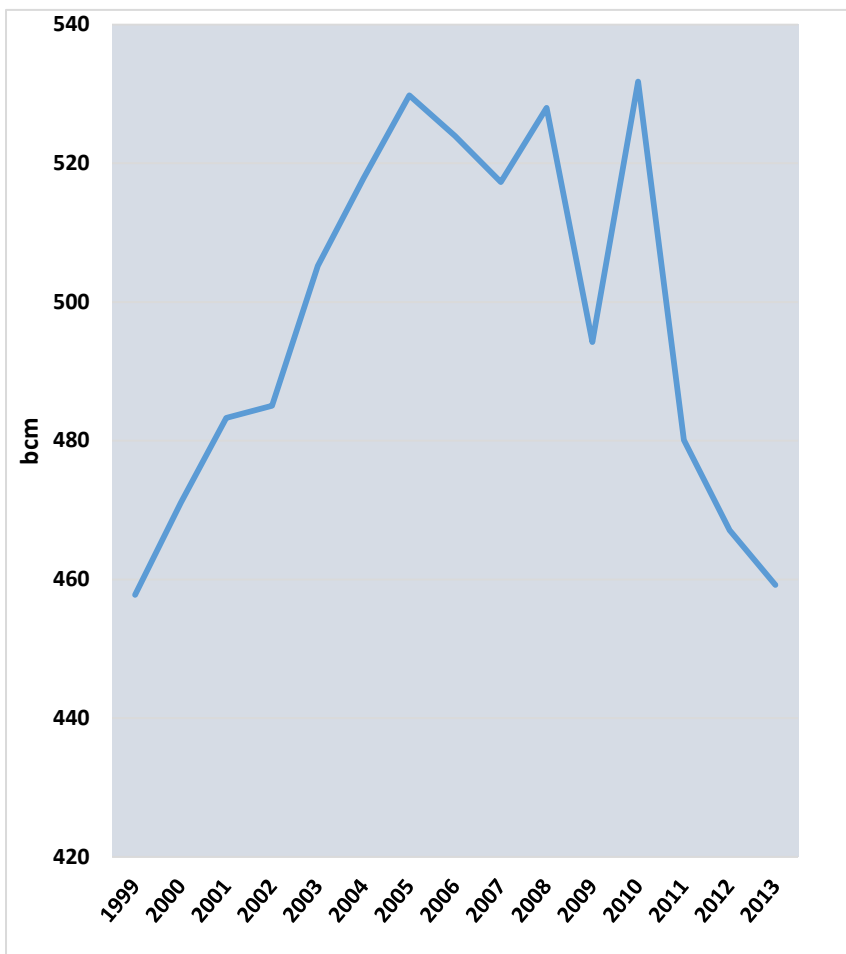


Main Findings

State of play –2013



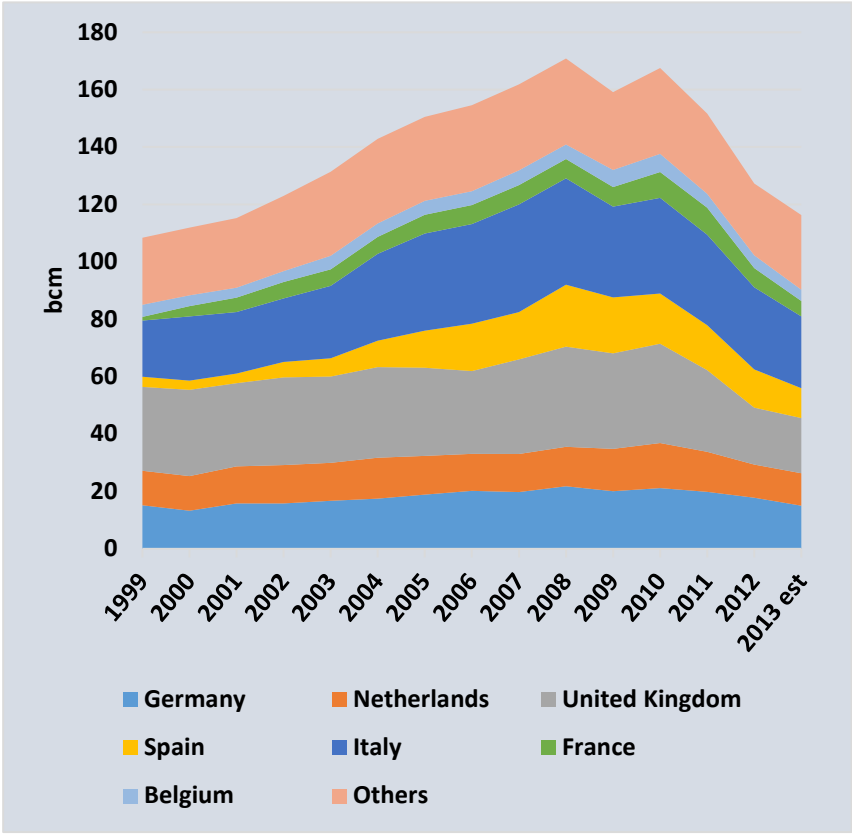
EU Gas Demand: the lost decade



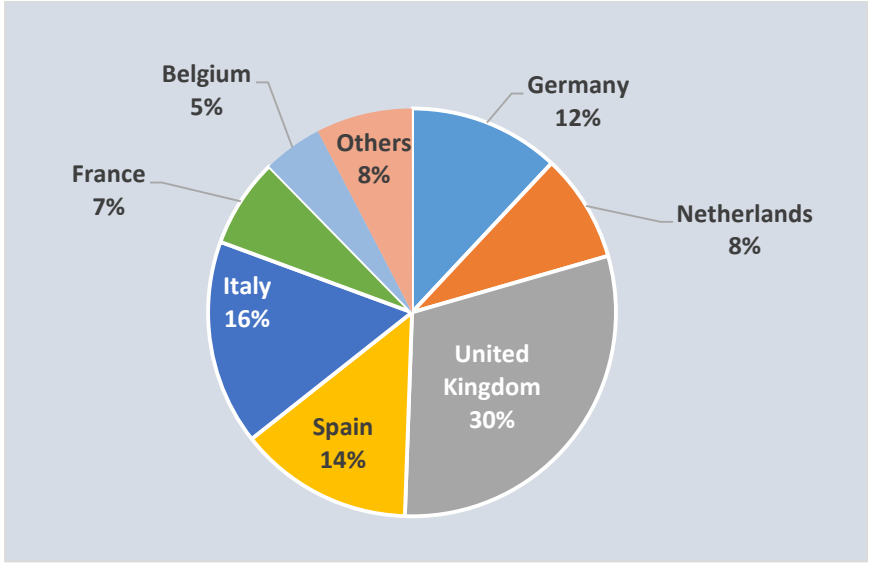
***In 2013, EU gas demand decreased for the third consecutive year
- 1% in 2013, after -3% in 2012 and -6% in 2011***



EU Gas demand in the Power sector



Decrease in gas consumption by the power sector (2013 vs. 2010): 51 bcm

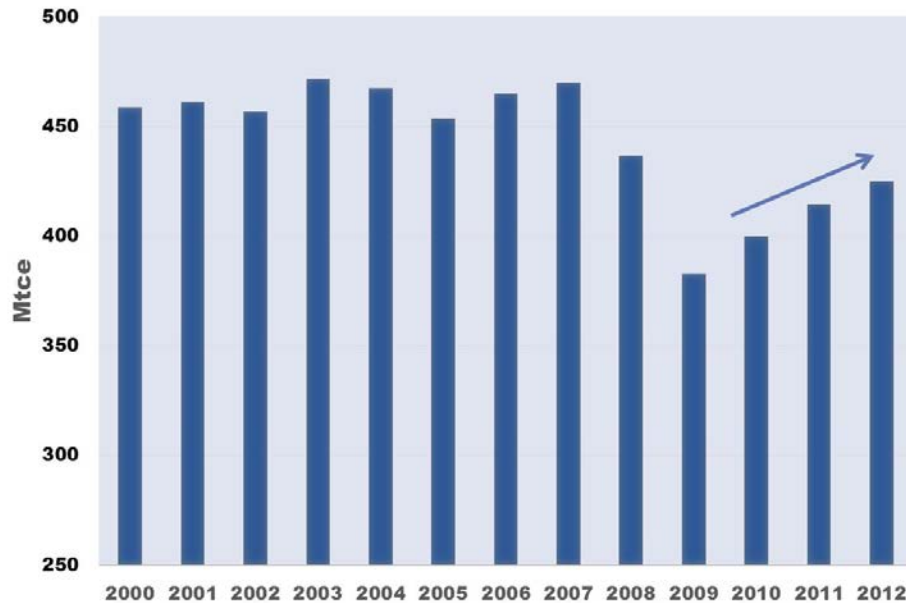


*Gas demand by the power sector has decreased by 51 bcm since 2010
The equivalent of the total French gas market...*

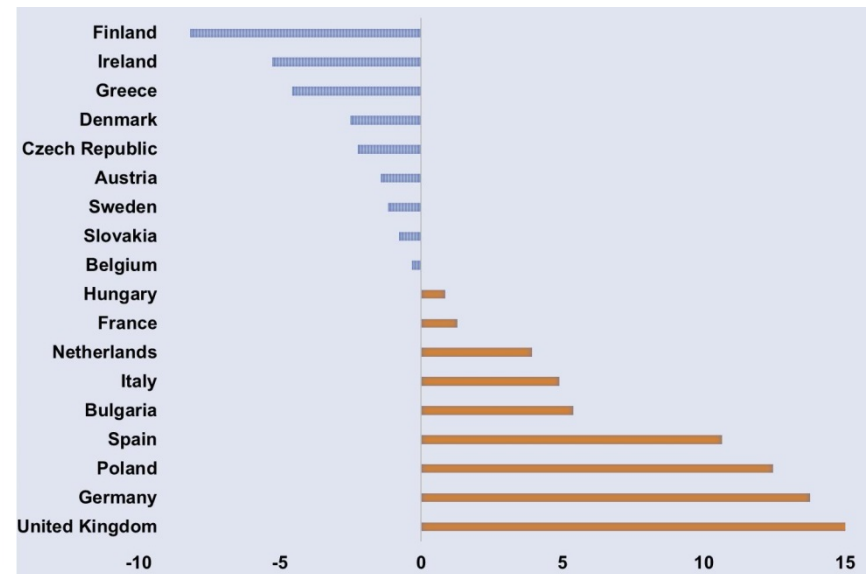


EU coal market

EU total coal consumption



Change in coal use (2012 vs. 2009) Mt

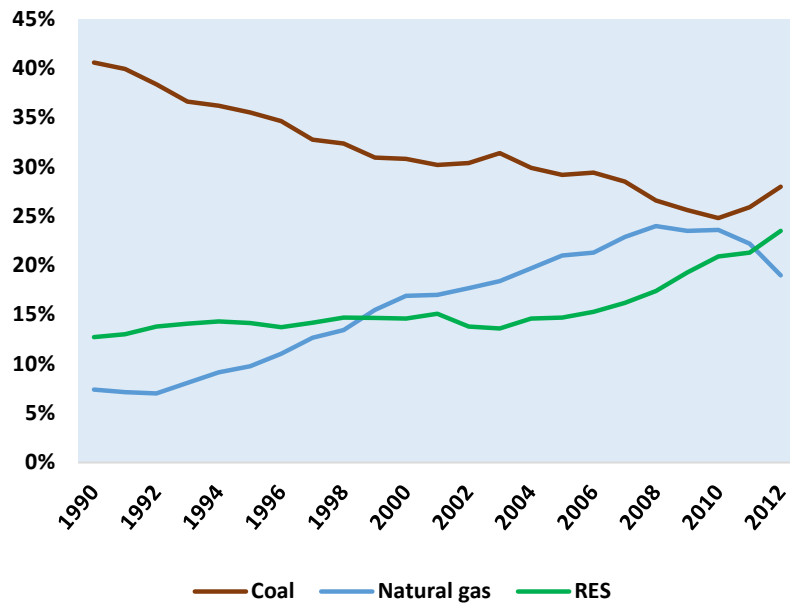


*The EU paradox: EU coal demand is rising...
While gas demand is falling*

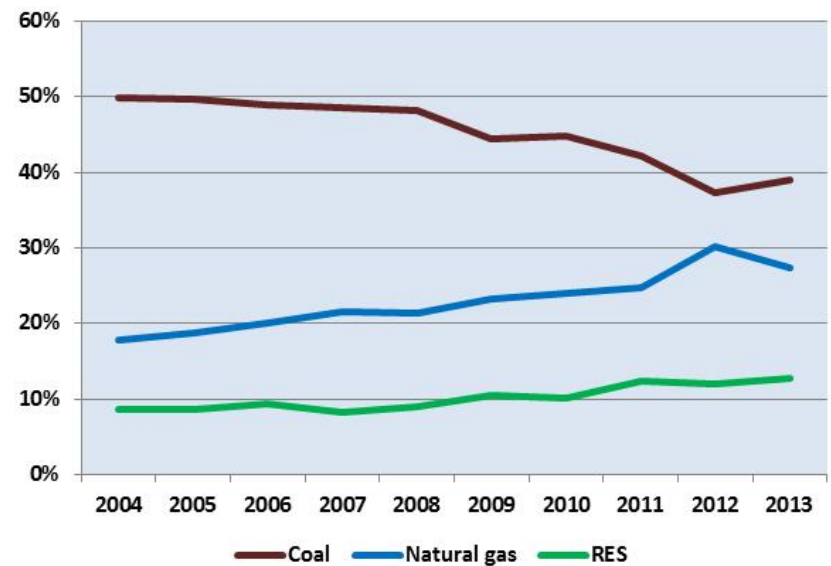


The European paradox

EU electricity generation, Gas vs. Coal and RES



US electricity generation, Gas vs. Coal and RES



Coal and RES are displacing natural gas in the EU power sector

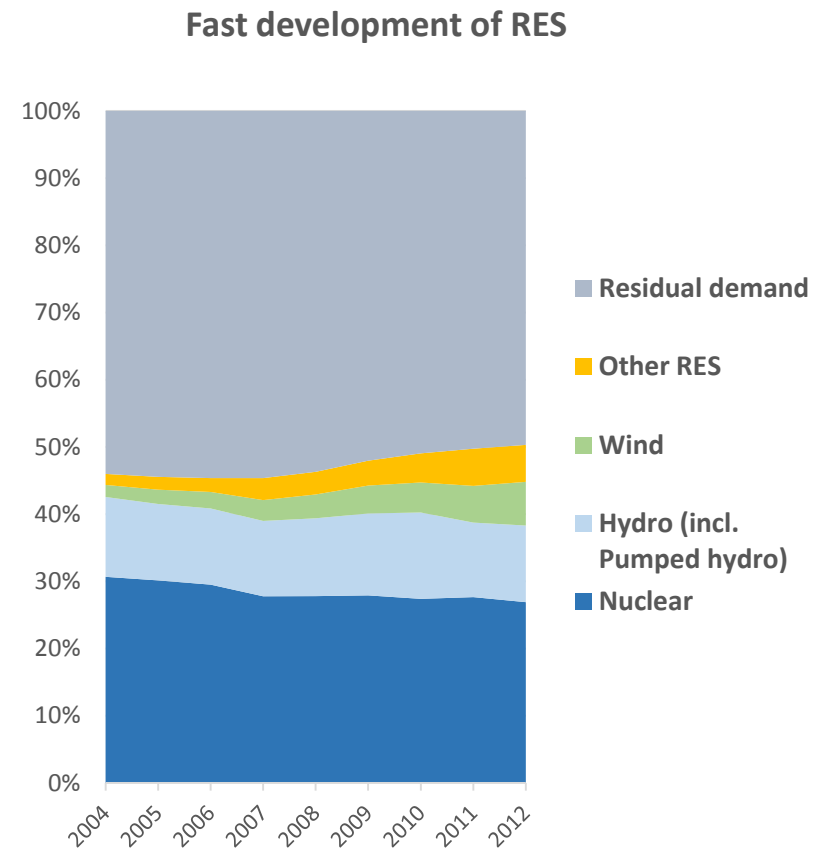
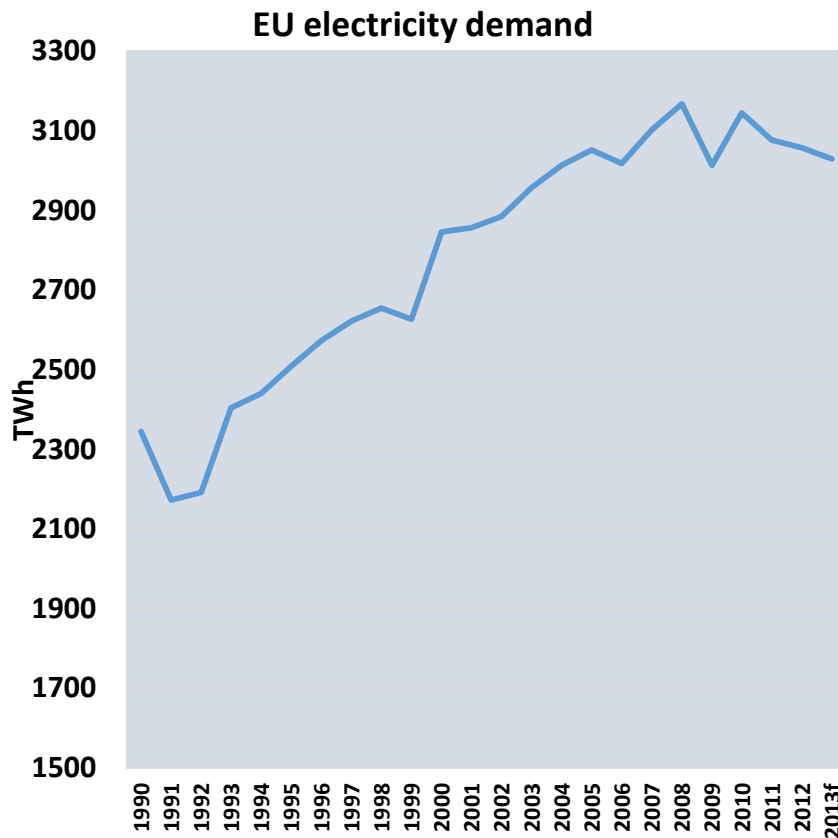


Main causes of the European paradox

European and international developments



Decrease in total and residual electricity demand

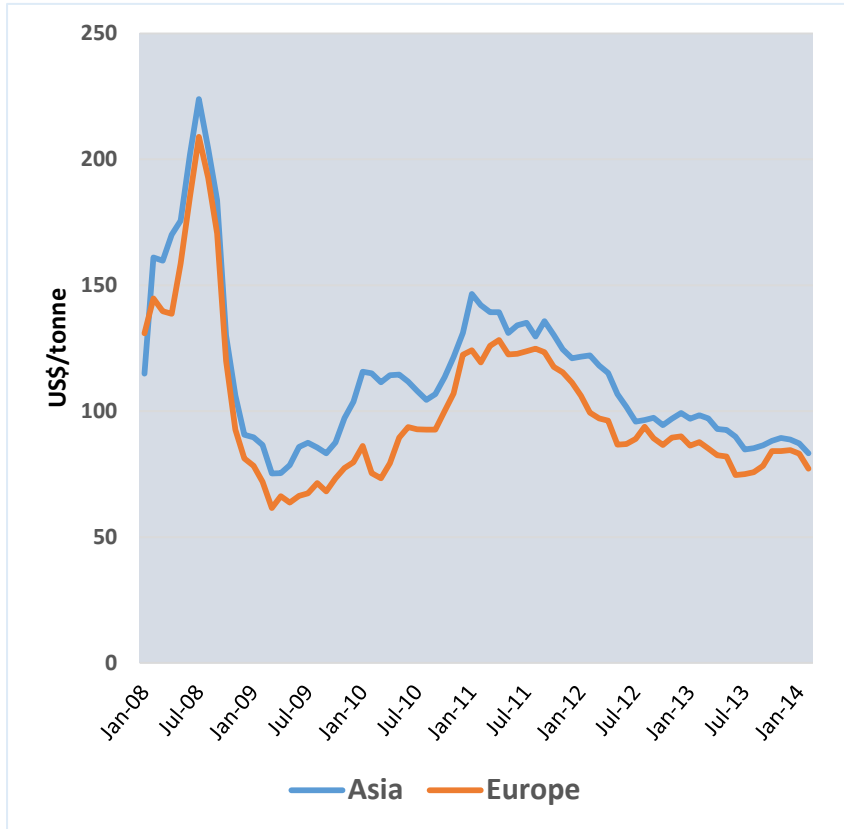


***EU electricity demand is declining (economic crisis, efficiency gains).
Fast development of RES decreases residual load addressed to other
fuels and decreases wholesale electricity prices***

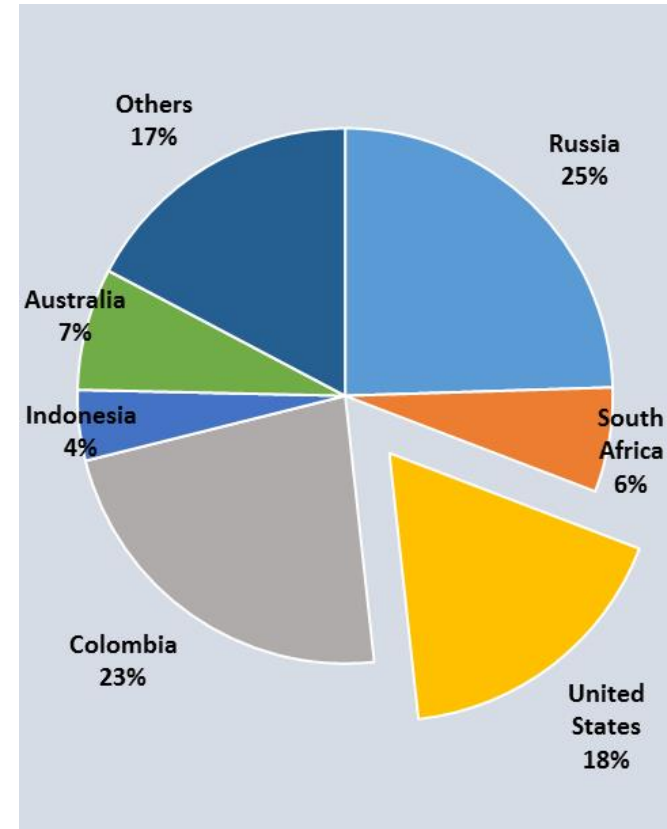
Coal competitiveness

Cheap coal import prices thanks to US shale gas revolution

Coal import prices



Coal imports in the EU, by supplier (2012)

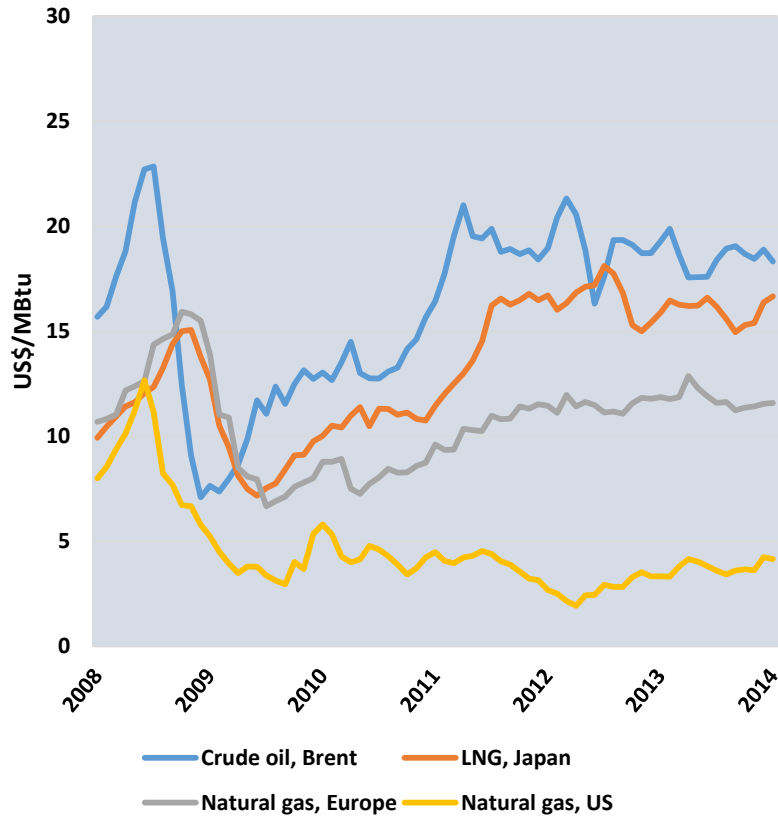


Coal prices have decreased by 38% since the middle of 2011

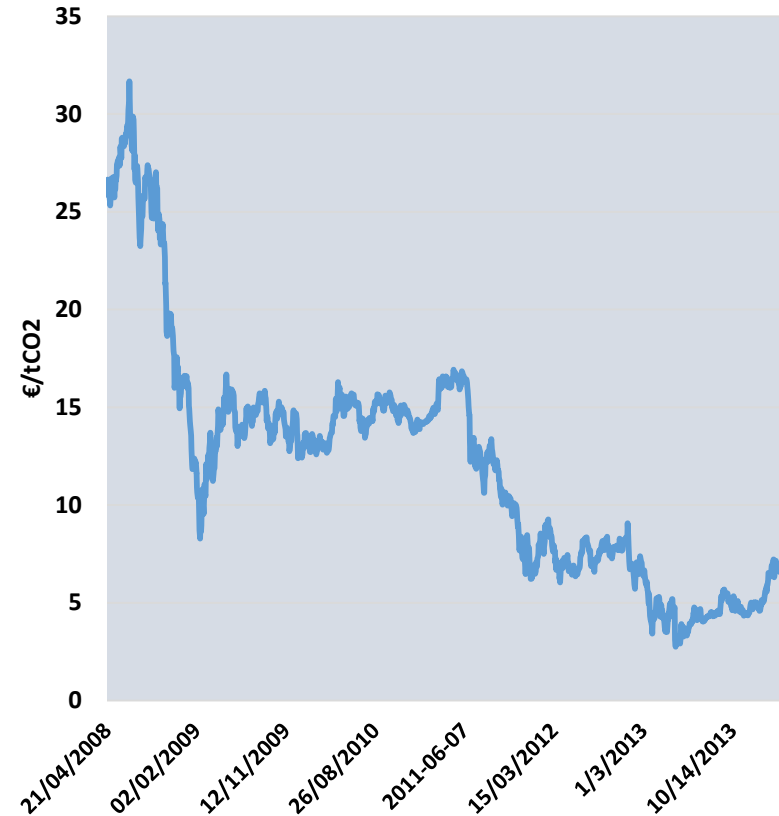
Coal competitiveness

Reinforced by the increase in gas import prices and the collapse of CO₂ prices

Regional gas prices vs. crude oil prices



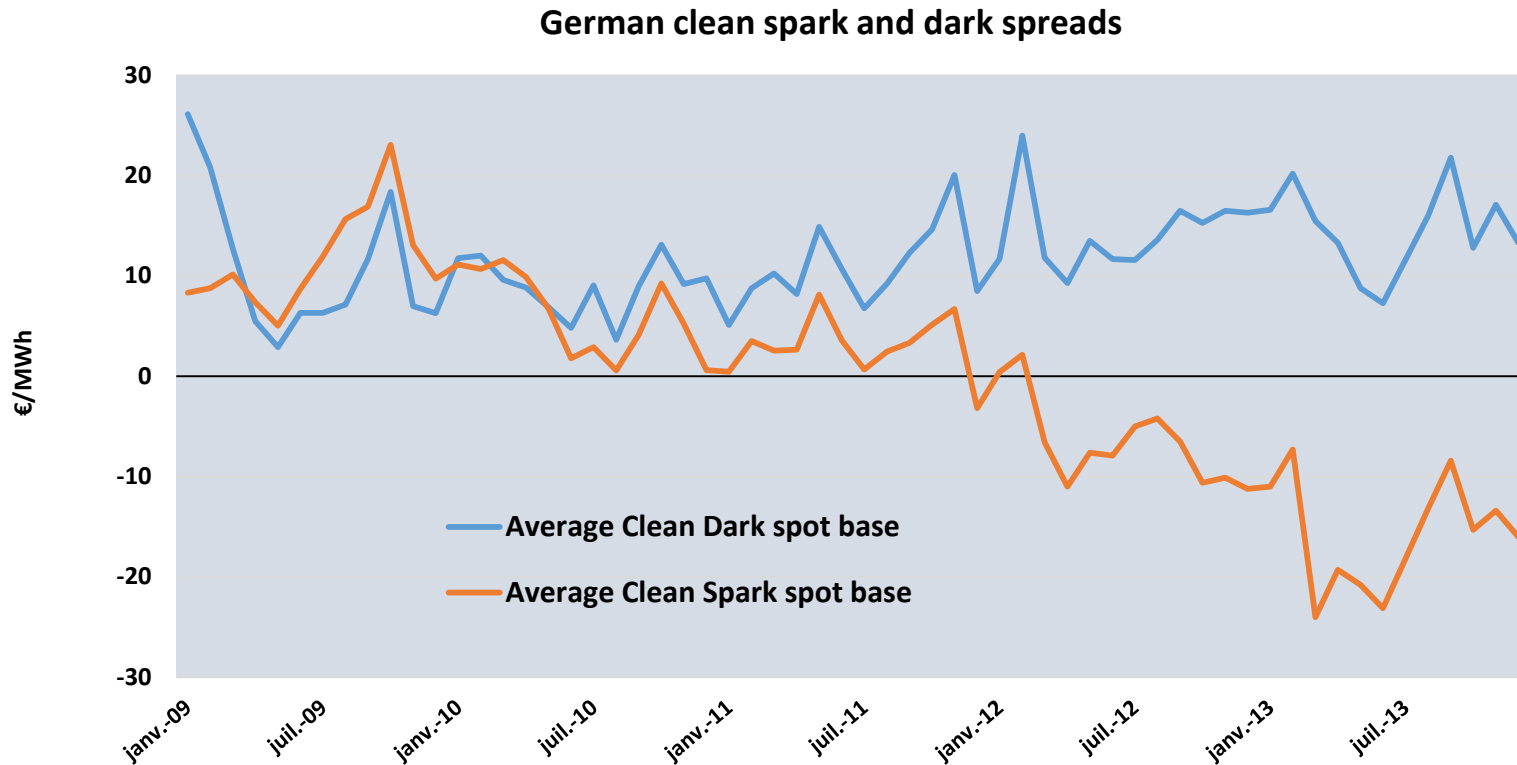
CO₂ Settlement Price



European gas import prices increased by 42% from 2010 to 2013, in line with crude oil prices. CO₂ prices collapsed



A perfect storm for CCGTs



Running gas-fired power plants is a loss-making business

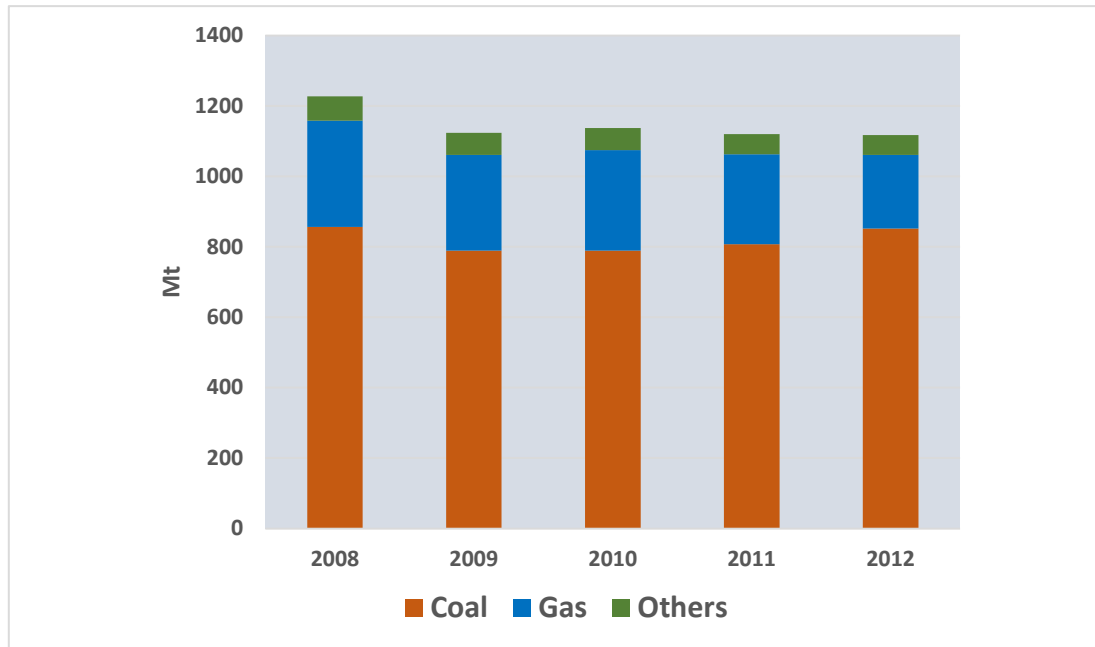
Consequences

None of the EU climate and energy objectives are met



The EU ETS is not leading to decarbonized electricity

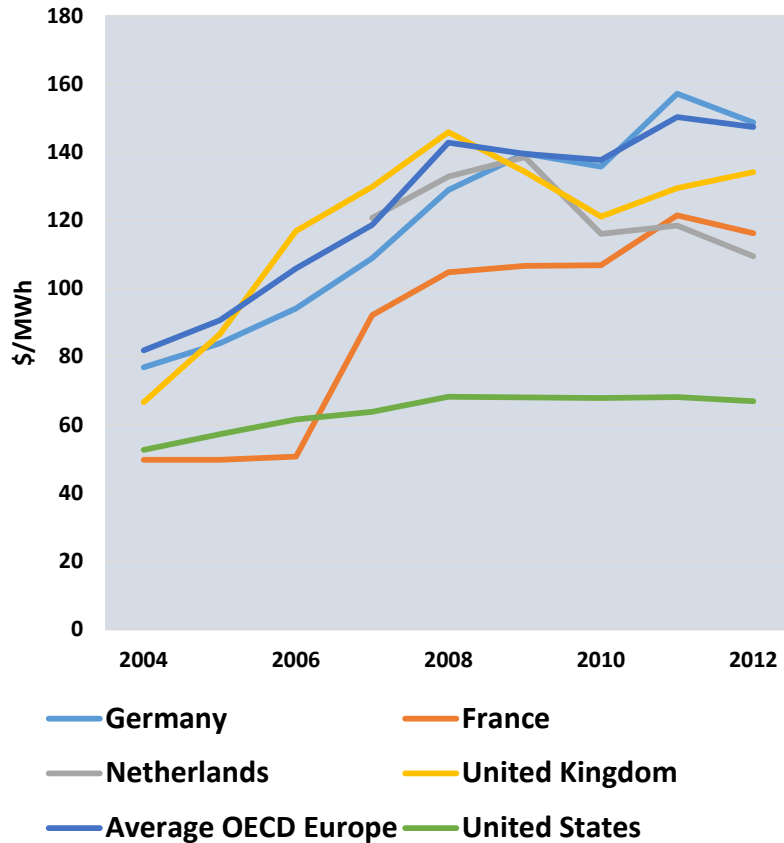
CO2 emissions by the EUETS power sector



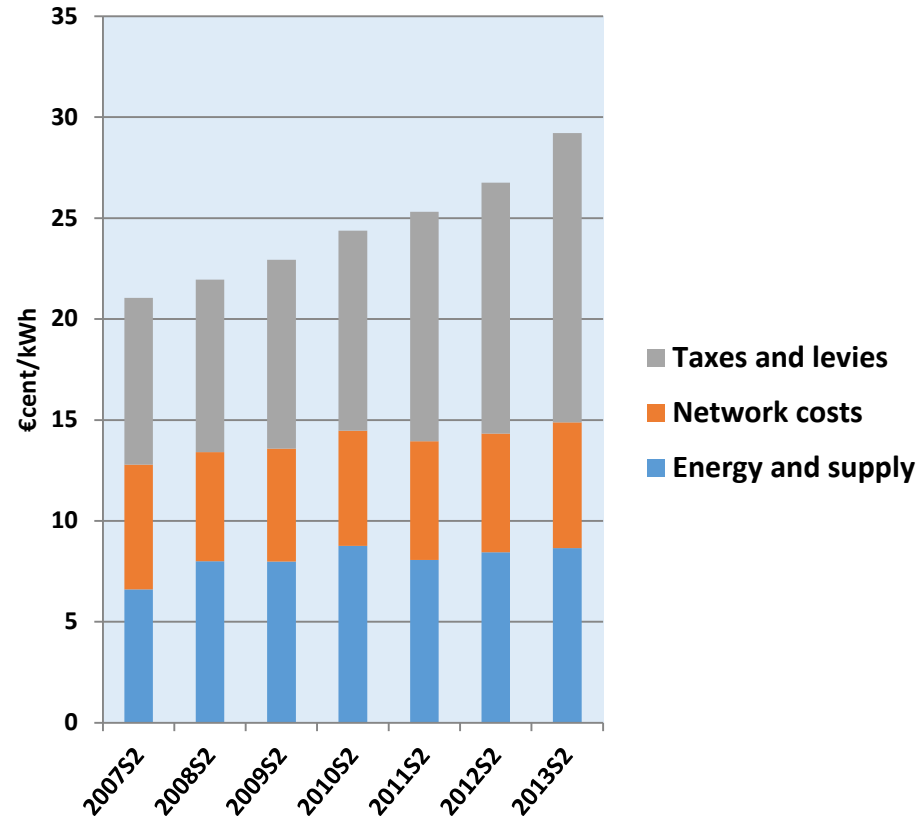
Switch from gas-to-coal means that CO₂ emissions in the EU ETS have not decreased since 2009.

Loss of competitiveness of EU industry

Electricity prices to industrial users



Household prices - Germany



Growing subsidies and energy bills

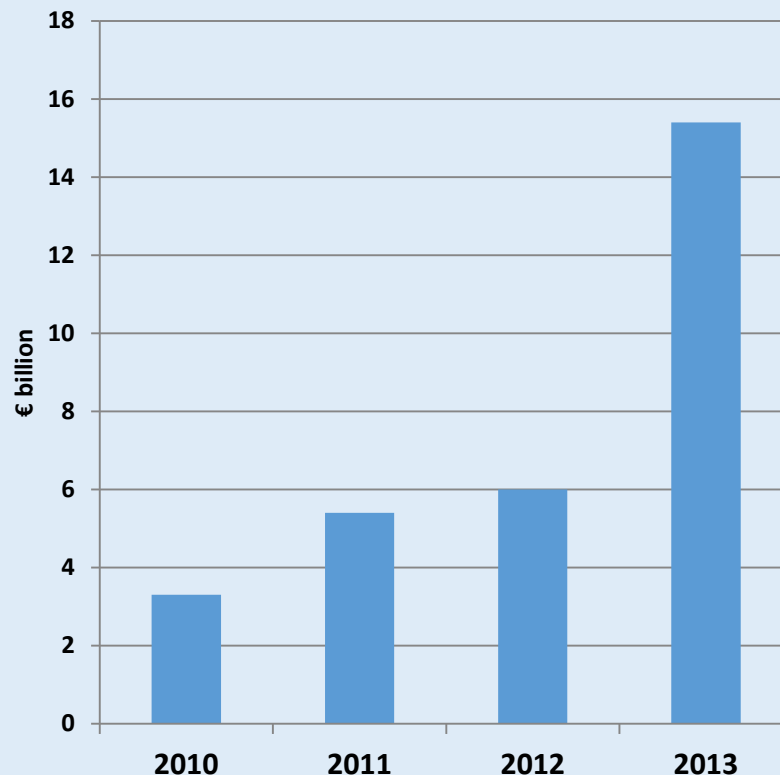


Security of supply is no more guaranteed

Mothballing/Closure of CCGTs

- **Low utilization of CCGTs**
- **Closure or mothballing of gas-fired power plants**
 - 25 GW in the past two years
 - including new-build efficient CCGTs
- **Financial and operational consequences**
- **No investment in new conventional plants**

Generation asset write-downs by major EU power utilities



If all gas plants under review by EU power utilities are closed, a total capacity of about 50 GW will close, or 28% of the current gas fleet capacity

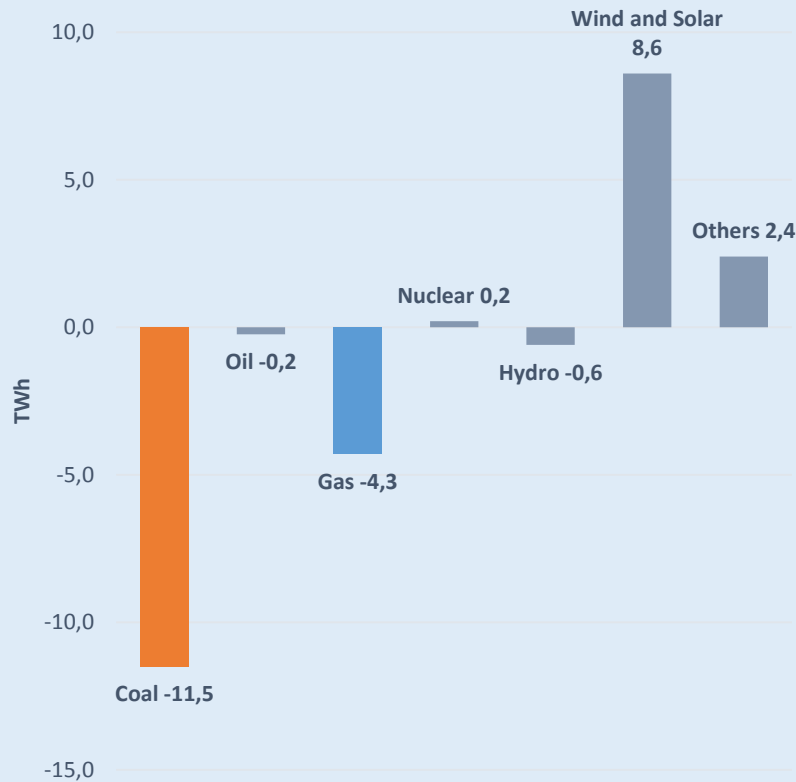


A coal renaissance in the EU?

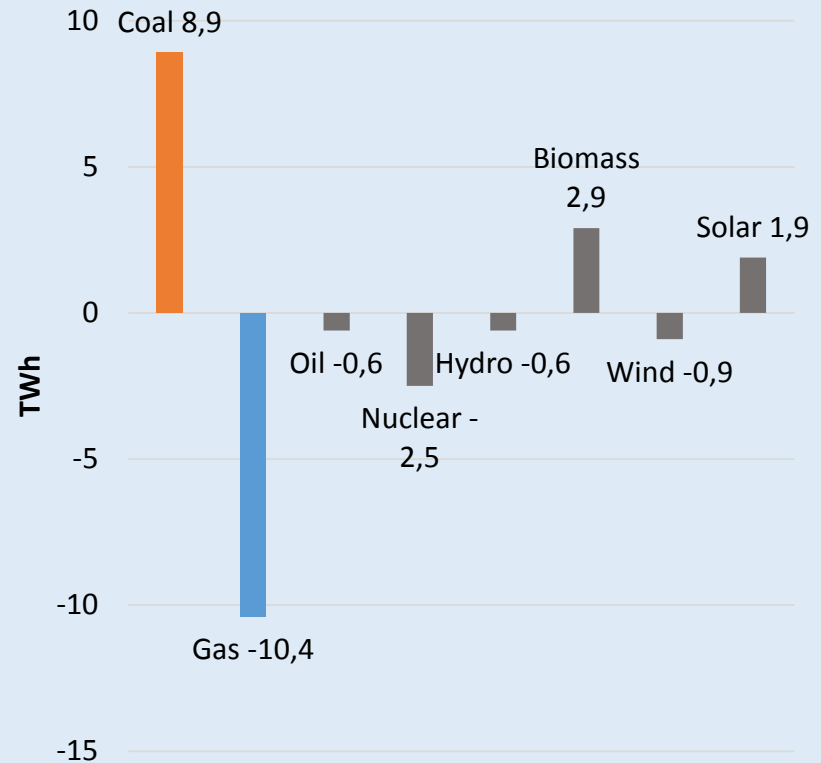


2013: a turning point?

UK - Electricity generation 2013/2012



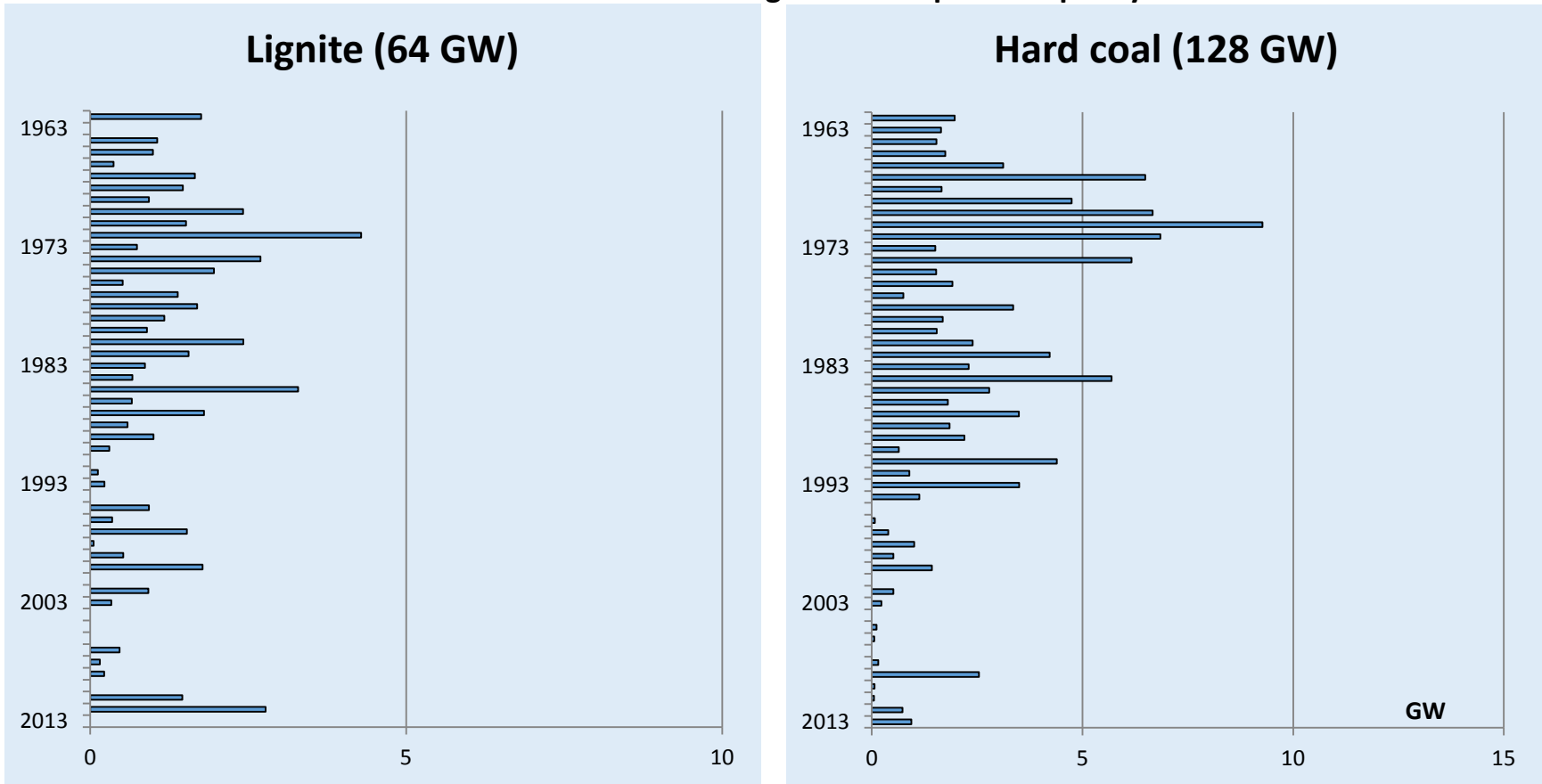
Germany - Electricity generation 2013/2012



This period of grace should end by 2020. Before if CO₂ prices increase
Highly dependent on EU ETS reform and Government interventions

Closure of aging coal power capacity

Date of commissioning of EU coal power capacity



Source: Enerdata

40% of capacity is more than 40 years old



Air emissions regulation (LCPD/IED)

- **Large Combustion Plants Directive** limits SO_x and NO_x emissions
- Opt in (FGD investment) or Opt out and close by end 2015
 - *15 GW of old coal plants closed by end 2015 at the latest, mainly in UK and France* (some already closed)
- **Industrial Emissions Directive** replaces LCPD on 1 January 2016
- Further tightens limits on SO_x and NO_x emissions
- Opt in (SCR investment) or Opt out and closure by 2023
- Some flexibility (Transitional National Plans)
 - *Additional closure of old coal-fired plants: 50 to 55 GW, mainly in the United Kingdom, Germany, Spain, Poland*

Overall, these closures account to almost a third of current EU coal capacity



CO₂ taxes/energy policies against coal in some countries

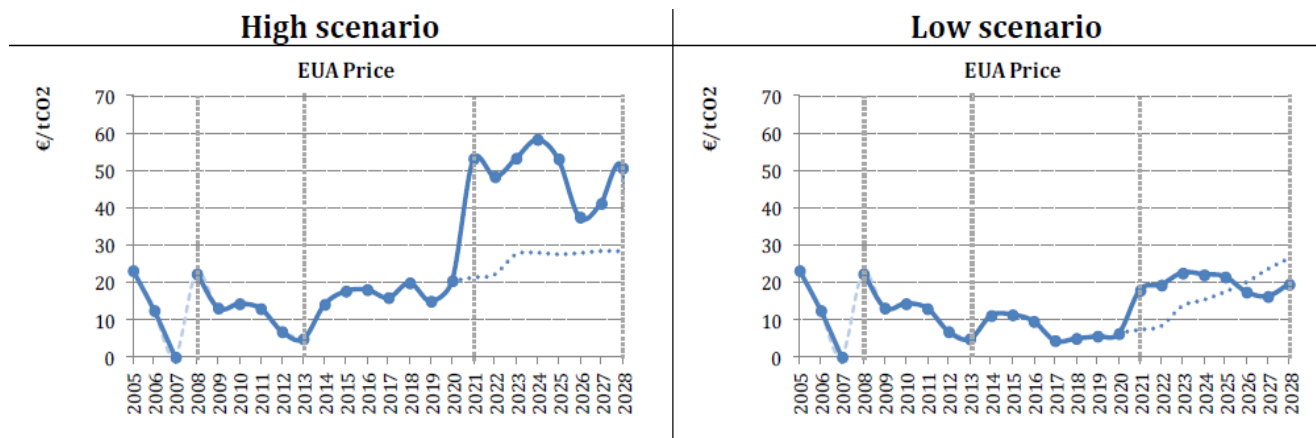
- ❑ **UK introduced a Carbon Price Floor (CPF)** on 1 April 2013 at £15.70/tCO₂
 - ❑ Power companies must pay £4.94/t and this rises to £18.08 by 2015-16 (until 2020). That is on top of the EU carbon price
 - ❑ UK requires at least 300MW net CCS on any new coal project
- ❑ **The Netherlands** introduced a **coal tax** in 2013 at a level of €13.65/t of coal. Additionally 10% biomass co-firing is mandatory.
- ❑ **Dutch National Energieakkoord**: deal with four electricity producers to close down five older coal fired power plants.
- ❑ **Spanish economy cannot sustain coal subsidies** and has announced they will end in December 2014
- ❑ ETS derogation decision impacting on **investment decisions in Poland**
- ❑ **Scandinavian countries: Phase-out of coal.** Conversion to biomass



EU ETS reform

Can the phoenix rise from the ashes?

Different possible futures



Source: Climate Economics Chaire, January 2014

- **Structural reform of the EU ETS**
- **2030 Climate and Energy Framework**
- **Emissions reduction by 40% by 2030**
- **Fast-track EUAs backloading (Feb 2014)**
- **Market stability reserve**

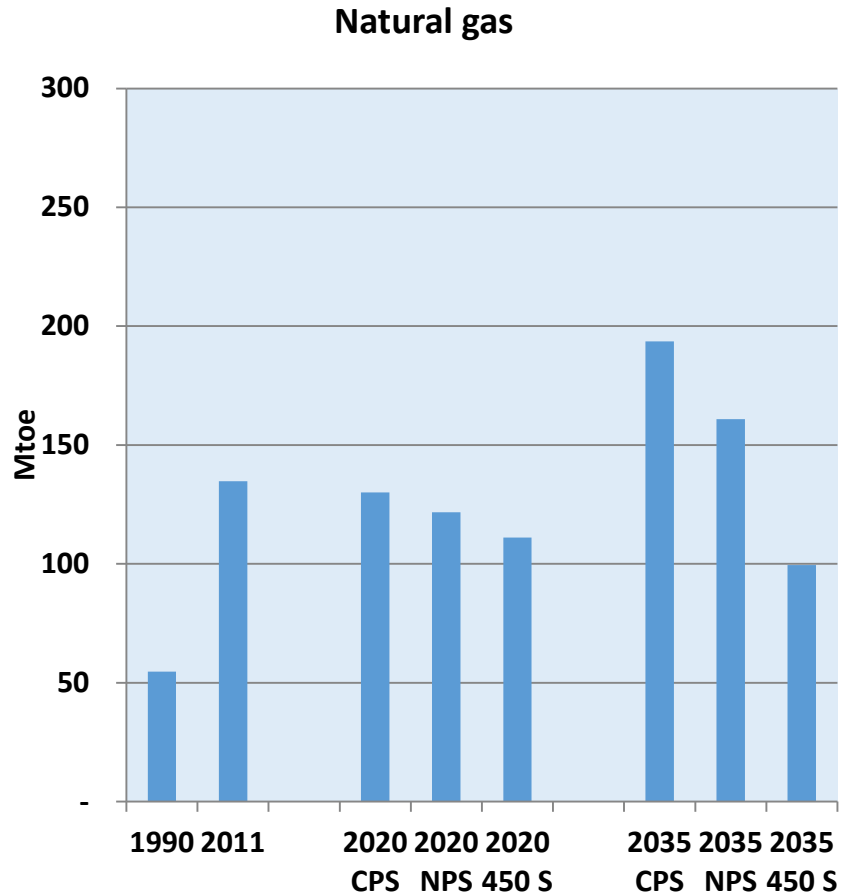
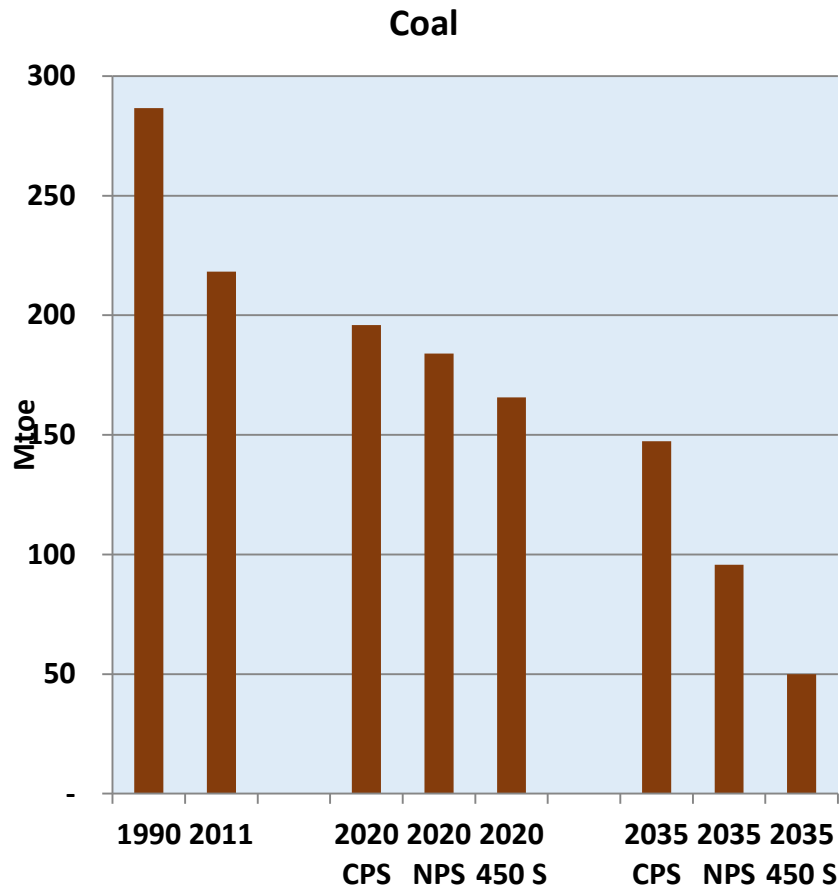


Conclusion

Gas and Coal contest



Future coal and gas demand by the EU power sector?



Decrease in coal demand does not automatically means more gas demand



A period of grace for coal, but short-lived

Short term

- Security of supply and competitiveness favour coal (even with the recent decrease in gas prices)**
- BUT**
- Government intervention (UK carbon tax, end of subsidies to coal mining in Spain, etc)**
- Air quality regulation**
- RES development: coal is starting to be pushed out of the system**
- CO2 price signal?**

- Caveat: Russia-Ukraine crisis**



Capacity crunch must be addressed

- Almost of third of gas and coal capacity are closing/at risk of closure**
- No investment in new conventional plants**
- Security of electricity supply must be addressed urgently**
 - Capacity adequacy (GW)**
 - Flexible generation (TWh)**



A future with gas: reinventing the business case

- Gas prices**
 - Market liberalisation**
 - New partnerships and pricing**
 - Shale gas development**
- Decarbonisation/EU ETS reform**
 - Price signal**
- Investment: addressing the security of supply issue and the need for flexible generation**



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