

# 26<sup>th</sup> World Gas Conference

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*PGC-C1*

What could the role of gas be in electricity?

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Sund Energy

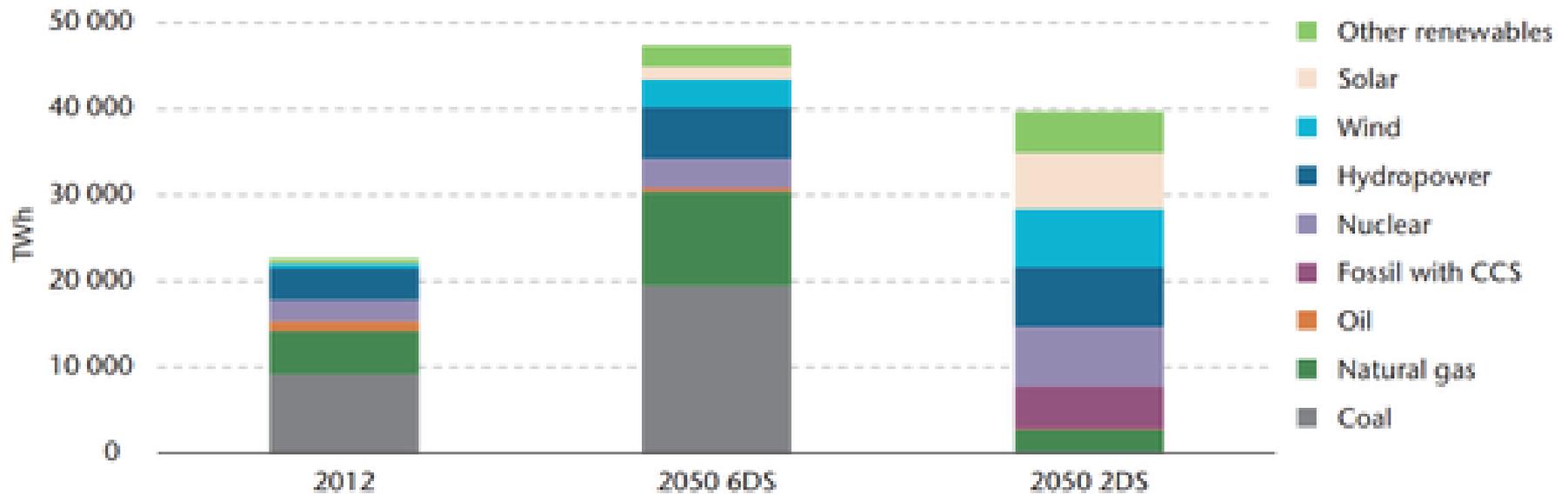


# For many years, gas generation was growing...

- Comfortable for the gas industry
  - Baseload generation, easy to plan and build
- The gas industry still seems surprised that this is over
  - New large generation in renewables, coal and even nuclear
  - More consumers generating, too – mainly not gas
- Now there is a gradual awakening – gas can be flexible!
  - Not always easy – agility and dialogue needed

# Global scenarios of IEA – 2 degrees sees very little gas

- IEA on 6 degree and 2 degree scenarios for 2050



# The first reaction of gas has been to protest

- **«The politicians don't understand»**  
«Renewables are far too costly needing large subsidies»
  - Remember, the world is not run by rational engineers!
  - This presentation will give some explanations and show some opportunities for gas
- **«The cleanest and cheapest fuel»**
  - Not gas, but the energy not used – efficiency
  - Once wind or solar is built – *very* low running cost
  - Gas increasingly put in the «fossil» box with coal
- Time for gas to wake up and smell opportunities
  - Smaller than earlier expected, but better than nothing!

# The recession has changed political priorities...

- **Geopolitical** risk of gas taking its toll in Europe
  - Yet another reason to go green and secure
- **Recession**, trade balances dictate lower prices and own energy
- "Sovereign energy" more important
  - Mainly nuclear and renewables
    - Coal in some countries, also large employer
    - US example – embracing shale oil and gas
      - » Potential for other countries, too
  - Suits the people wanting to reduce emissions
- So, **image** of gas has changed, more difficult to justify
  - Still room for gas to play a role, but different from before
    - Agility and even humbleness needed + dialogue and transparency

# The EU is clear: much less gas will be needed/wanted

- EU commits to climate
  - Focus on cost effectiveness
- Energy efficiency & less fossil fuels in mix
  - Want to be less vulnerable to imports, use more renewable energy and emit less carbon
  - Energy Union confirms this

## Towards the Paris Protocol



“ Every person and every country of the world stand to benefit if we can prevent climate change from reaching dangerous levels. Paris presents us with the opportunity to do this and we must grab it with both hands.

*Commissioner Miguel Arias Cañete*



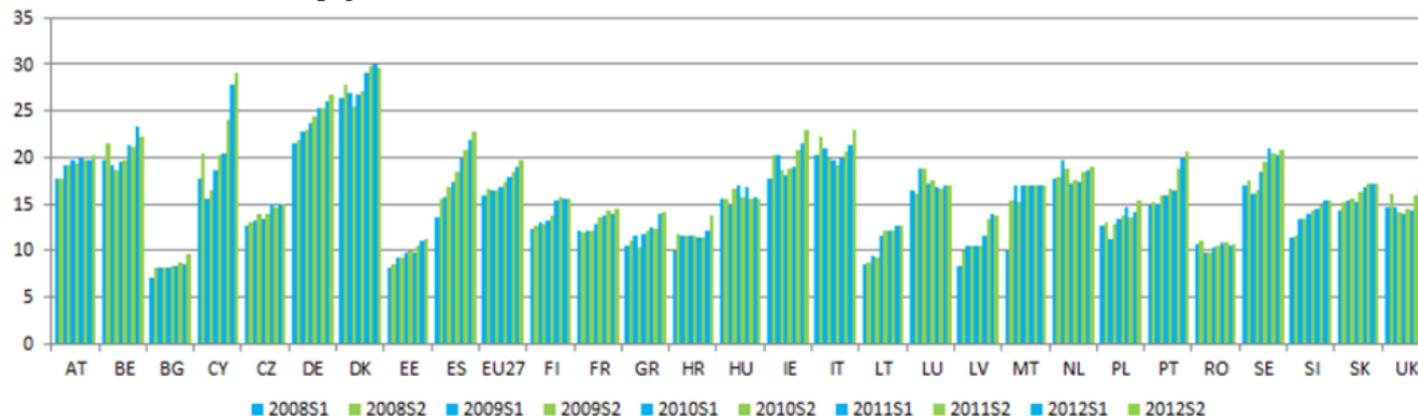
“ A more energy-efficient, low-carbon economy is the cornerstone of the energy union. If we scale-up domestic policies and international cooperation, we can achieve it: it is a matter of political will.

*Vice-President Maroš Šefčovič*

# All decision makers look at prices – but differently

- **Governments** want less spent on imported (fossil) energy – impacts energy policy
  - Reducing imports of fossil fuels especially – own renewables better
- **Electricity** generators see *falling* wholesale prices
  - Need low cost generation – nuclear, coal, renewables
- **Households** see *rising* electricity bills – some fuel poverty
  - Energy ever smaller part of bill – less trust in energy companies and government
  - Own electricity generation, mainly from renewables, seen as economic, trendy and good risk management
- Impact – diverse reasons, but few in favour of more gas use – dialogue needed

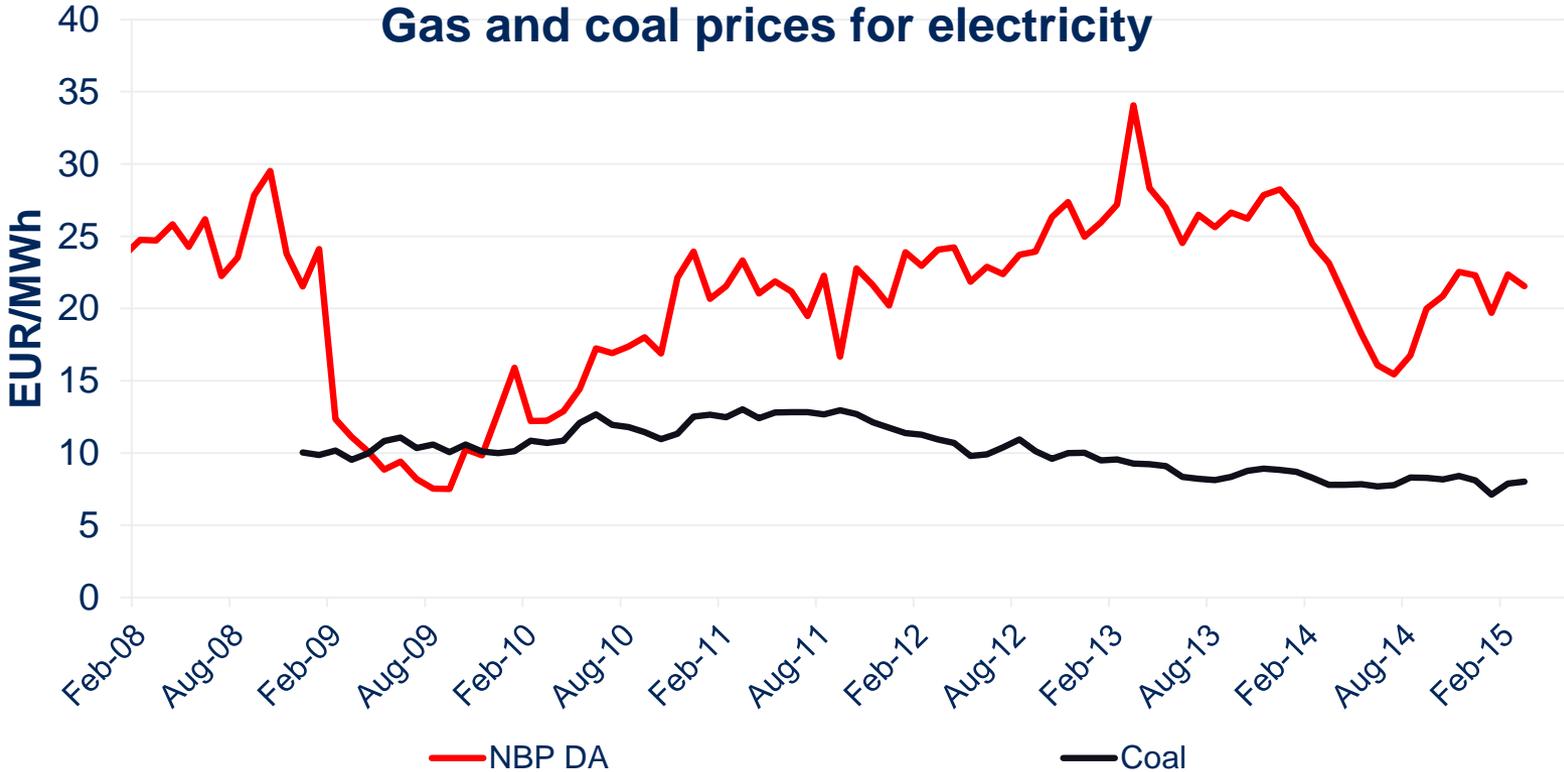
**Household electricity prices** (€/kWh inc. taxes)



# Germany and UK – both reducing gas, but differently

- **Germany:** In 2014, more electricity was generated from **solar** (33 TWh) than from gas (31 TWh)
  - This gives a load factor of the gas generation of 12%, which is lower than wind at 14% (Source Fraunhofer)
  - Germany now the largest exporter of electricity in EU
- **UK:** Gas generation mainly depends on variations in wind generation.
  - Higher CO2 costs than in Germany, and at times lower gas prices in summer, making more gas run in summers
    - This also reflects the need for more air conditioning in the summer and more gas heating in the winter (Source: National Grid, UK)
  - Growing exports of both electricity and gas

# Coal is still cheaper for electricity

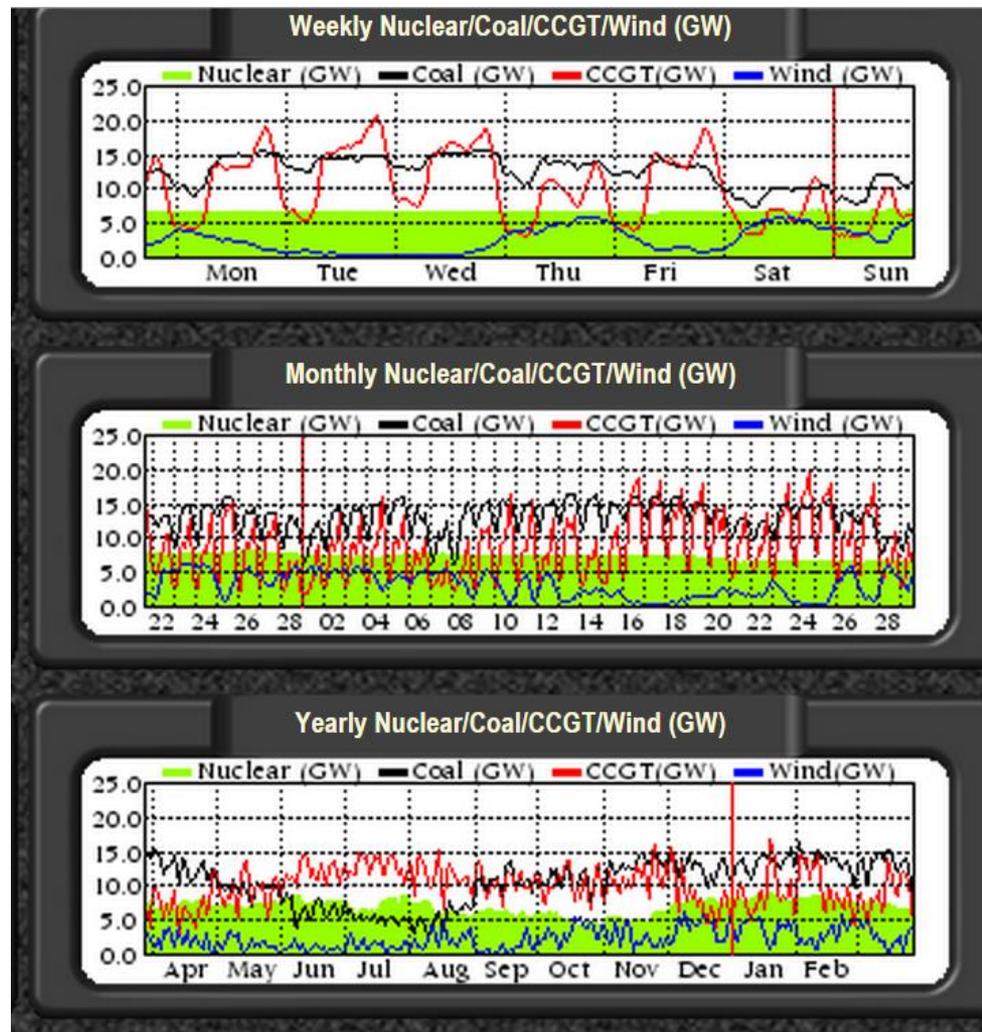


Data: Montel, ICAP, Sund Energy analysis

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# Learn about the realities of balancing

- UK overview
  - Notice gas generation seldom over coal – only with high demand and low wind generation...
  - Most variable, which impacts spreads
- Germany even more difficult to compete with coal and other fuels today
  - Lower cost of CO<sub>2</sub> than UK



# «Gas the residual fuel» – at times almost invisible

## Electricity production in Germany in September 2014

 usage tips

**date selection**

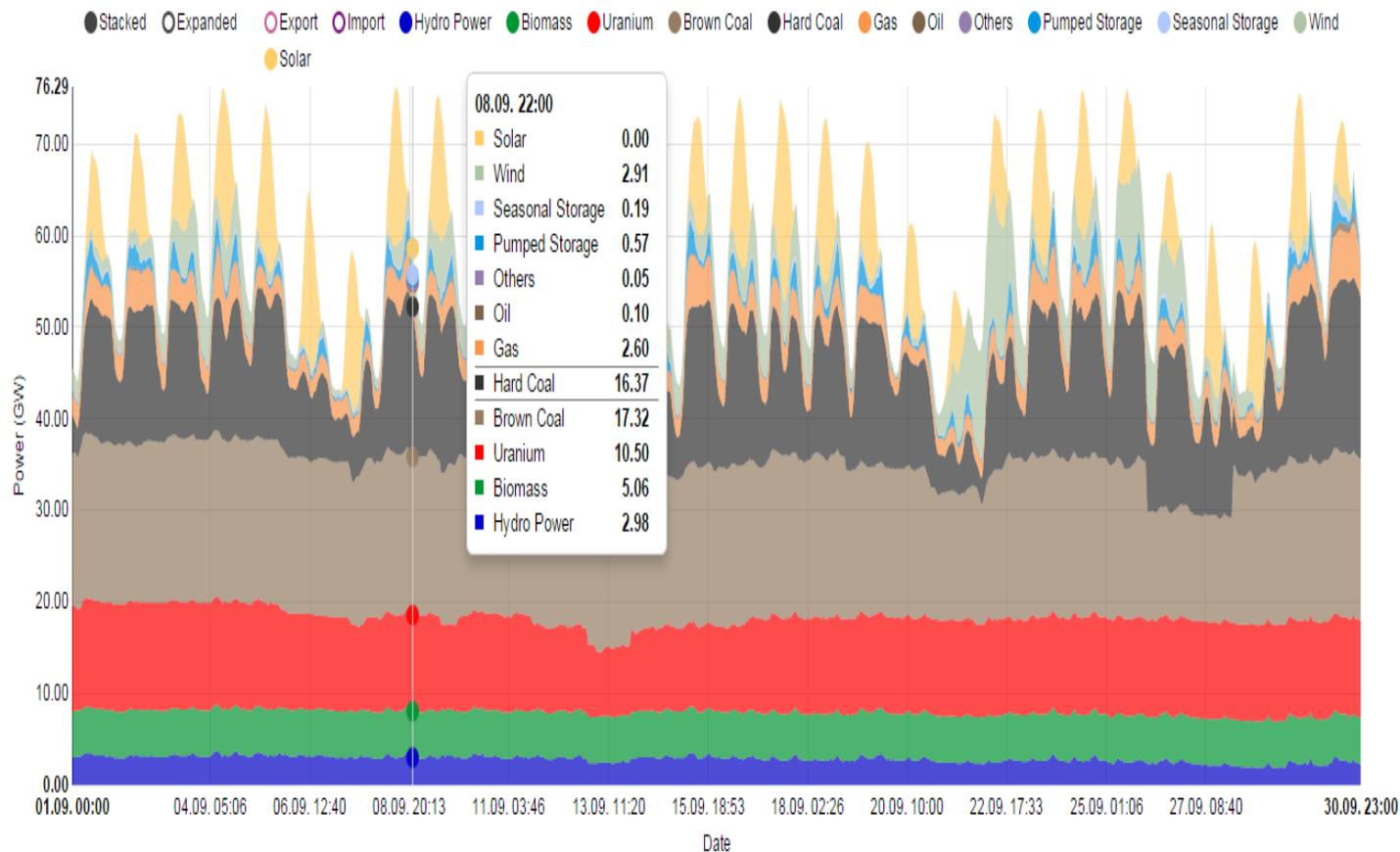
year:  
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conv. >100MW  
 all sources  
 solar, wind  
 import, export

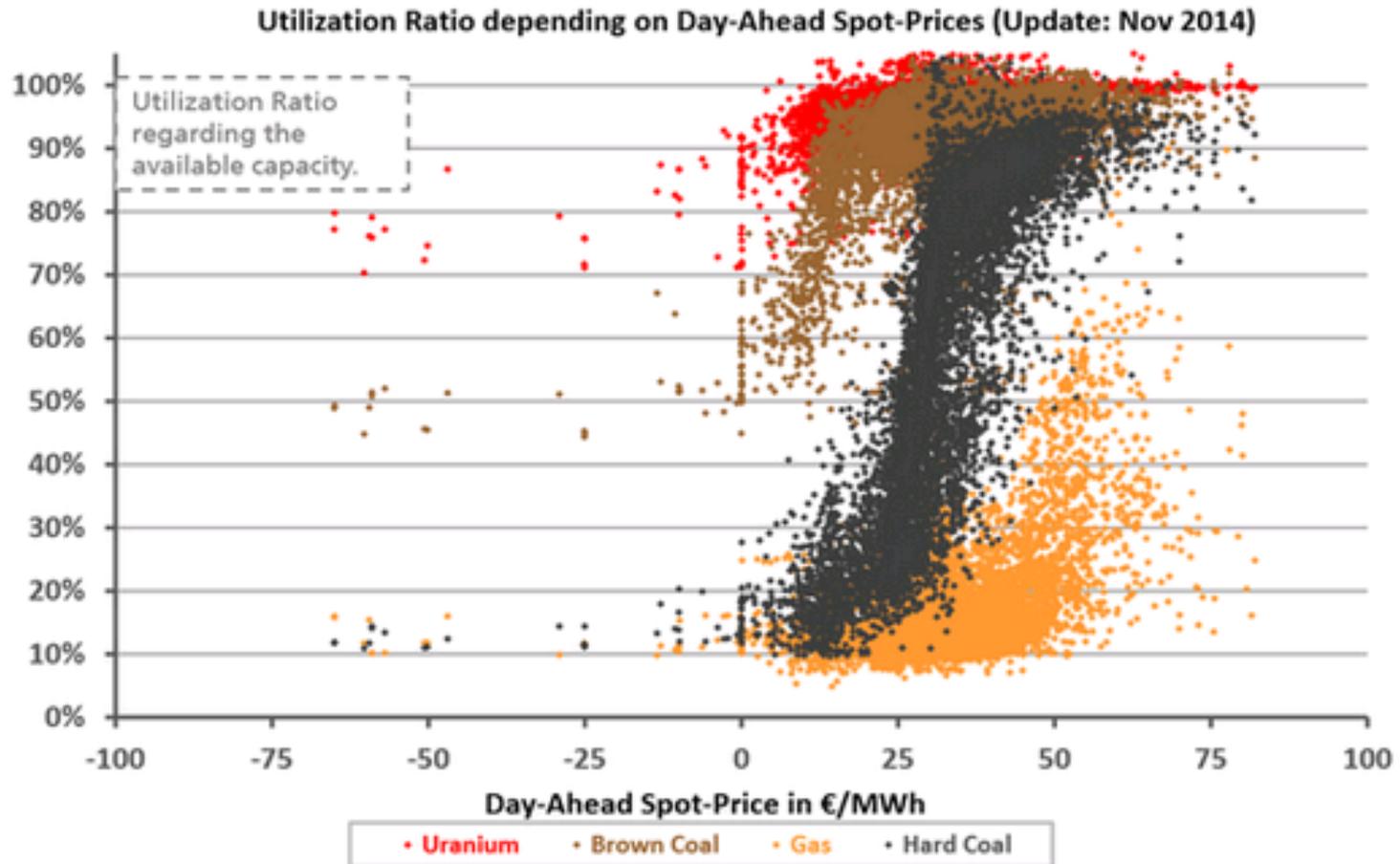
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# Difficult to make money on peaking plant

- The spread between baseload and peak electricity prices in Germany have fallen from €14 in 2008 to €3 in 2014
  - Base load fell from €71/MWh in 2008 to €32/Mwh in 2014
  - Peak prices (08:00-20:00) from €87 to €36
- In addition, negative prices are now more common than extreme peaks

# Both coal and gas provide balancing in Germany – gas needs higher electricity prices to run



**Source:** Fraunhofer ISE, data from EPEX-SPOT/EEX, Destatis

# Merits of balancing electricity in the future of Europe

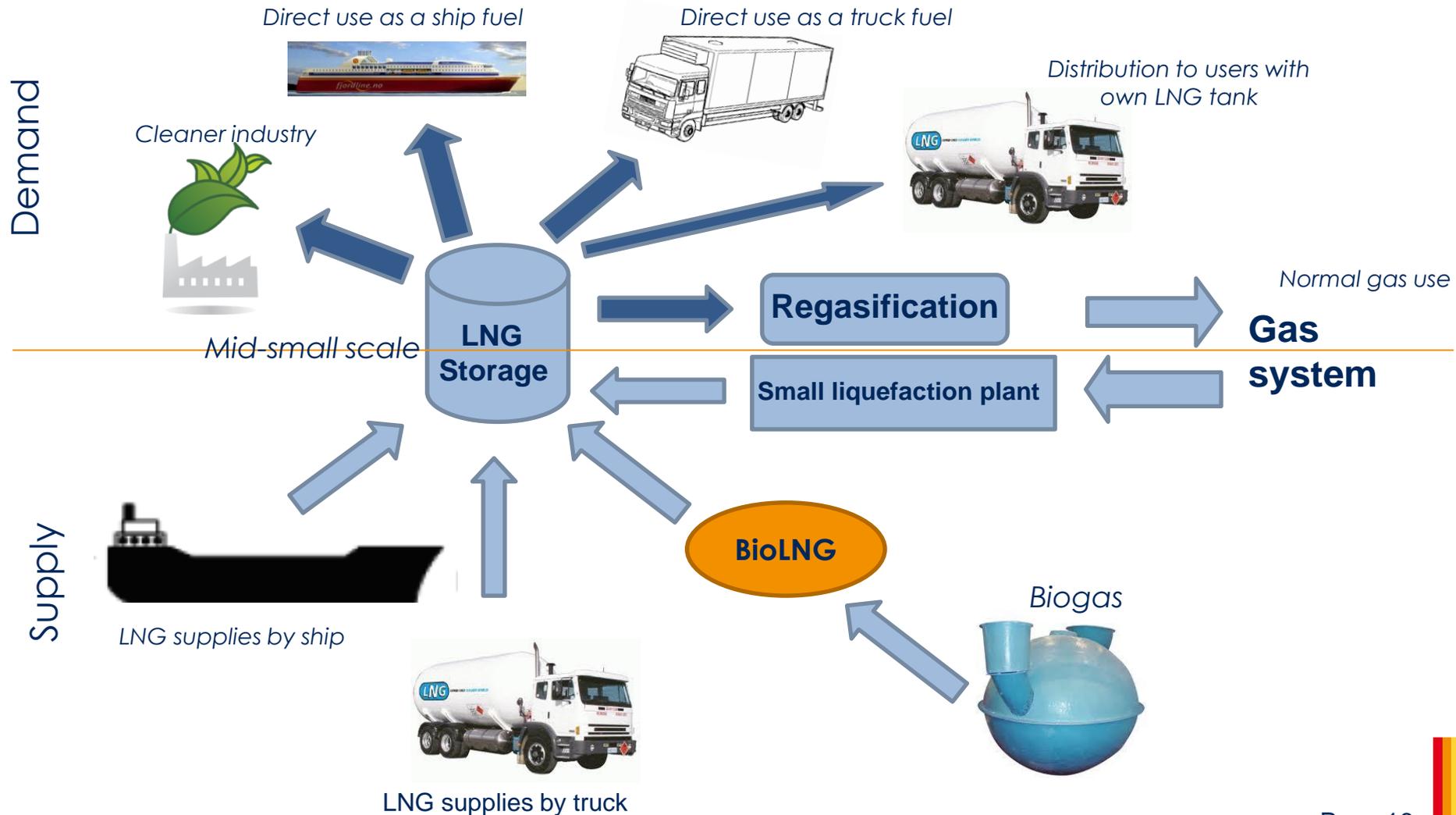
- The simplest balancing is to trade with neighbours
  - More infrastructure interconnectors makes this easier
  - German exports very high at times of sun and wind
  - Different generation mix by country – complement each other
- Demand side management is expected, too
  - Efficiency as well as timing of devices to run outside of peak
- Gas has a place, but don't expect large volumes baseload in Europe
  - Life of gas will be longer with dialogue and integration
  - Biogas, syngas, storage, transportation, back-up supplies
    - Biogas for transportation is climate *negative*
- So, **embracing** renewables can lengthen the life of gas!

# Outside EU different drivers, in addition to price

- **China** – growing gas demand, also for electricity generation replacing coal
  - Gas for transportation for local environment and less pressure on oil prices
  - Renewables big – both for own use and exports
- **US** – growing gas demand with lower prices than coal – renewables, too
  - Some concerns around methane emissions
  - Growing use of gas for transportation and bunkering
- **Middle East** – more gas but large investments in renewables, too
  - Will impact export volumes
- **Latin America** – growing use of renewables and some gas
- **Russia** – growing gas demand possible – depends on economy and alternatives - complex
- **Africa** – growing gas demand with more reserves developing – large potential

# Small-scale LNG – Potential in off-grid areas

Several uses and several sources of LNG – could be optimised!

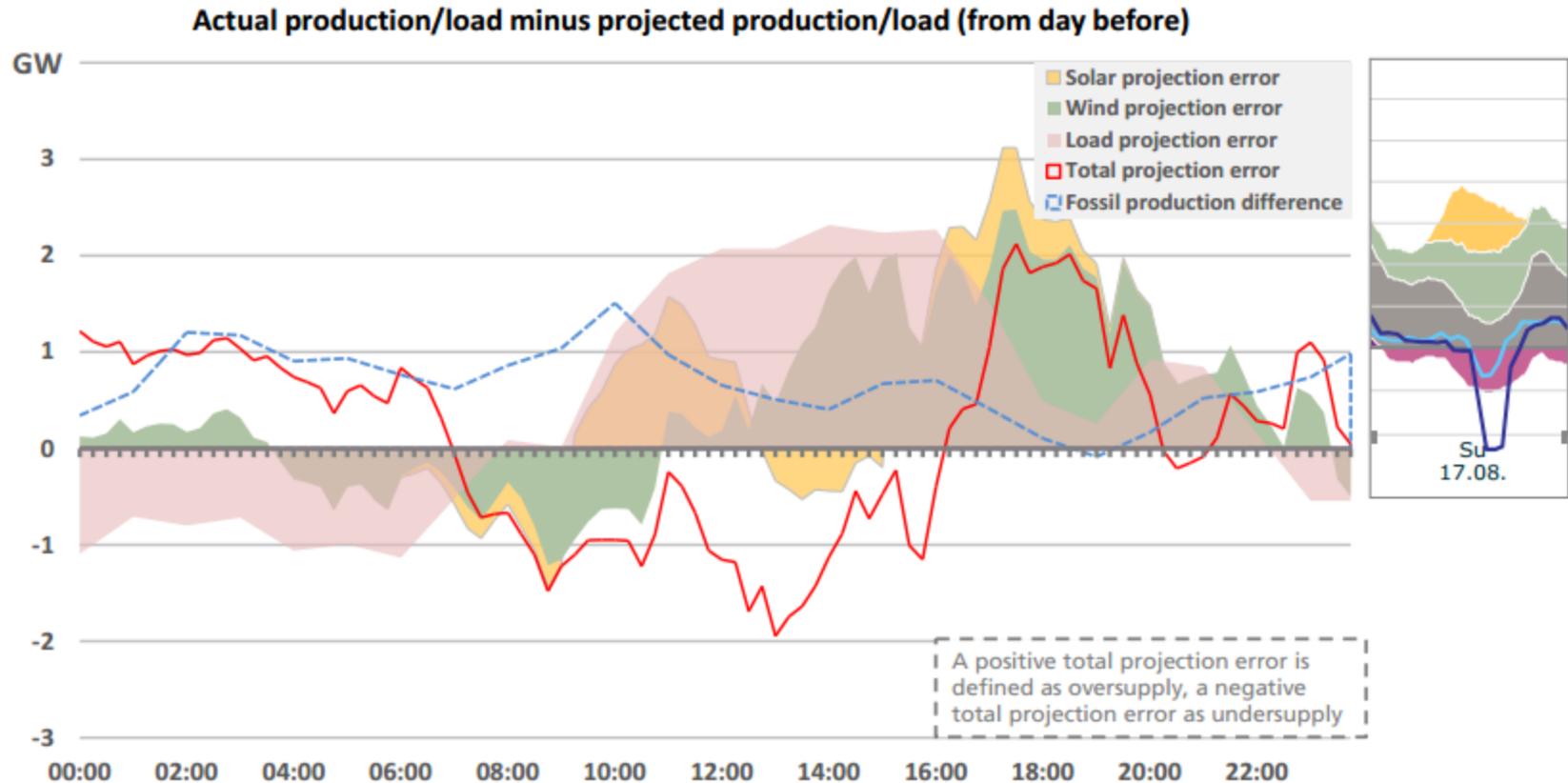


# But are not renewables difficult and unpredictable?

- At **demand** level – more “home made” energy can be sold
  - Making consumers net producers – reducing overall demand doubly
- The good part about renewables – once they are there, they run!
  - No running decision involving cost of fuel – guaranteed access to grid
    - Tough to compete with for gas
- This impacts predictability and prices for gas generation
  - Oversupply leads to low power prices and a need to export or turn down other generation – gas first, then coal (today)
  - Undersupply leads to higher power prices and a need to import or turn on other generation – less often than many had expected
- While wholesale markets in general get lower prices, especially when oversupplied, **retail markets get higher prices**
  - Grid, taxes and more

# Yes, it's complicated and many possible errors to make

## Analysis of the negative Spot prices on 17.08.2014



Source: Johannes Mayer, Fraunhofer Institute for Solar Energy Systems; Data: EEX, Entso-E

Back to month chart

Back to week chart

# Stop assuming that gas is the cheapest and cleanest fuel!

- The cheapest and cleanest is the energy not used
  - *Efficiency* is a no-brainer and will happen everywhere
    - Japan has been impressive after Fukushima (*setsu-den*)
    - Impacts all energy demand: Heating, electricity and transport
    - Developing countries higher growth than traditional OECD
- Yes, gas is **flexible**, and **cleaner** than oil products and coal
  - No sulphur or particles – good for urban transportation and power
  - Clear synergies with renewables here
    - Phasing in more biogas and synthetic gas (from power)
    - This extends life of infrastructure, but more agility is needed
- Yes, the future will see some challenges, but also **opportunities** – the alternative is worse
  - Consider areas of cooperation suited organisation – or find smaller partners
    - Small scale at times easier for smaller companies

# How to complement renewables?

- If you want to be the flexible friend in the power markets –talk with them!
  - So far talking to the regulators and others – in a whining voice...
    - Fighting or ignoring that part of the industry has no value and the gas industry will lose respect
  - From the generators to the politicians and even the public
- **Dialogue** is better – find out how gas can complement other energy, without fighting for subsidies, or other complaints
  - Especially LNG may be suited for new markets – small scale/virtual pipelines
  - Would also improve security of supply to Europe
- The biggest challenge for electricity today – energy storage
  - Here gas industry could help – much storage capacity
- The biggest challenge for emissions often transportation – gas can contribute
  - Natural gas reduces emissions vs oil products – biogas even better!