Centre Energie - Centre for Energy

EU gas demand perspectives by 2030

Marc-Antoine Eyl-Mazzega, Director

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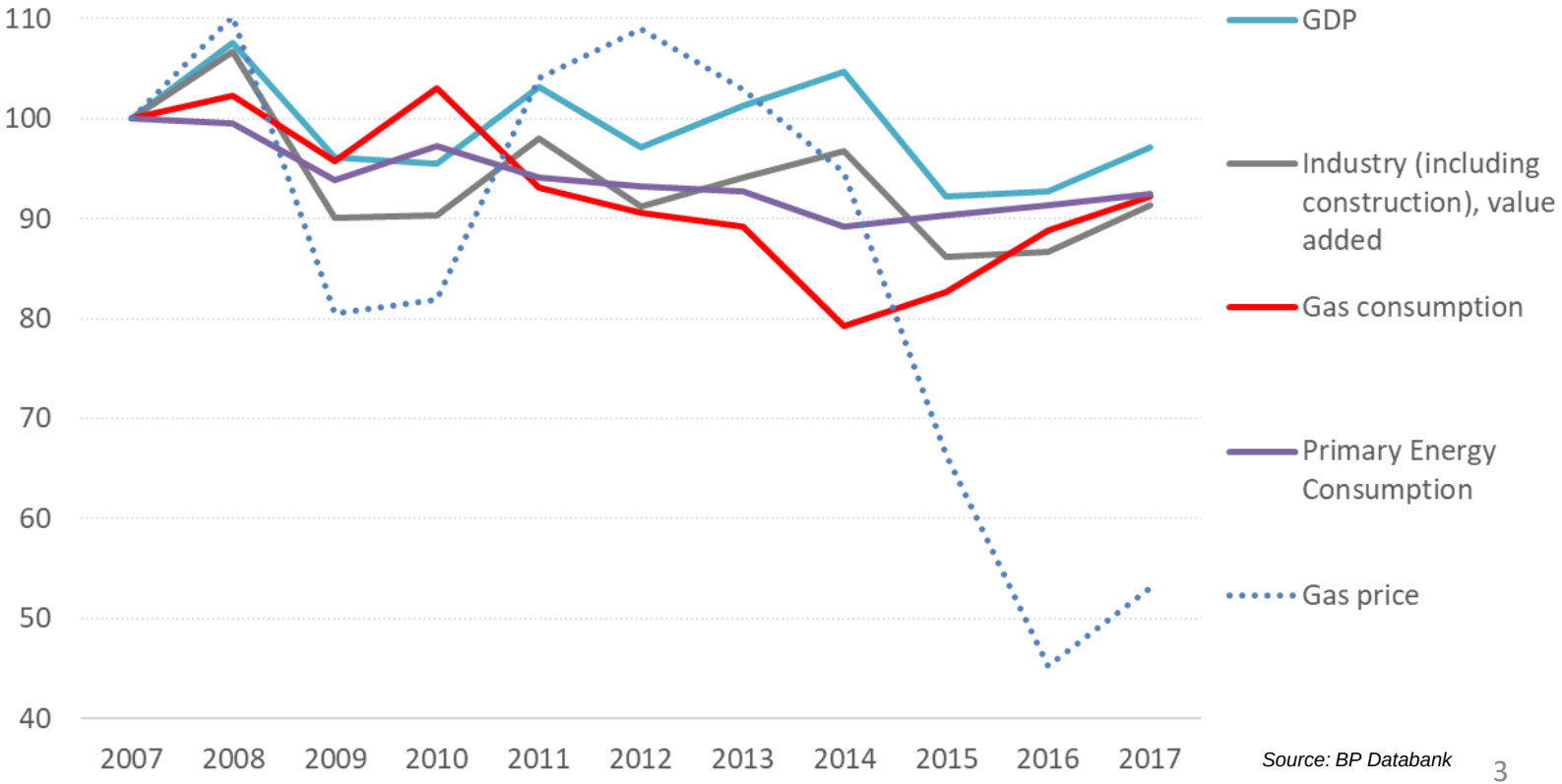
1. Key trends from the past ten years: a look back into the EU gas market, 2007-2017

The evolution of gas demand points to a defensive position, yet with a temporary twist in 2015 in spite of higher prices

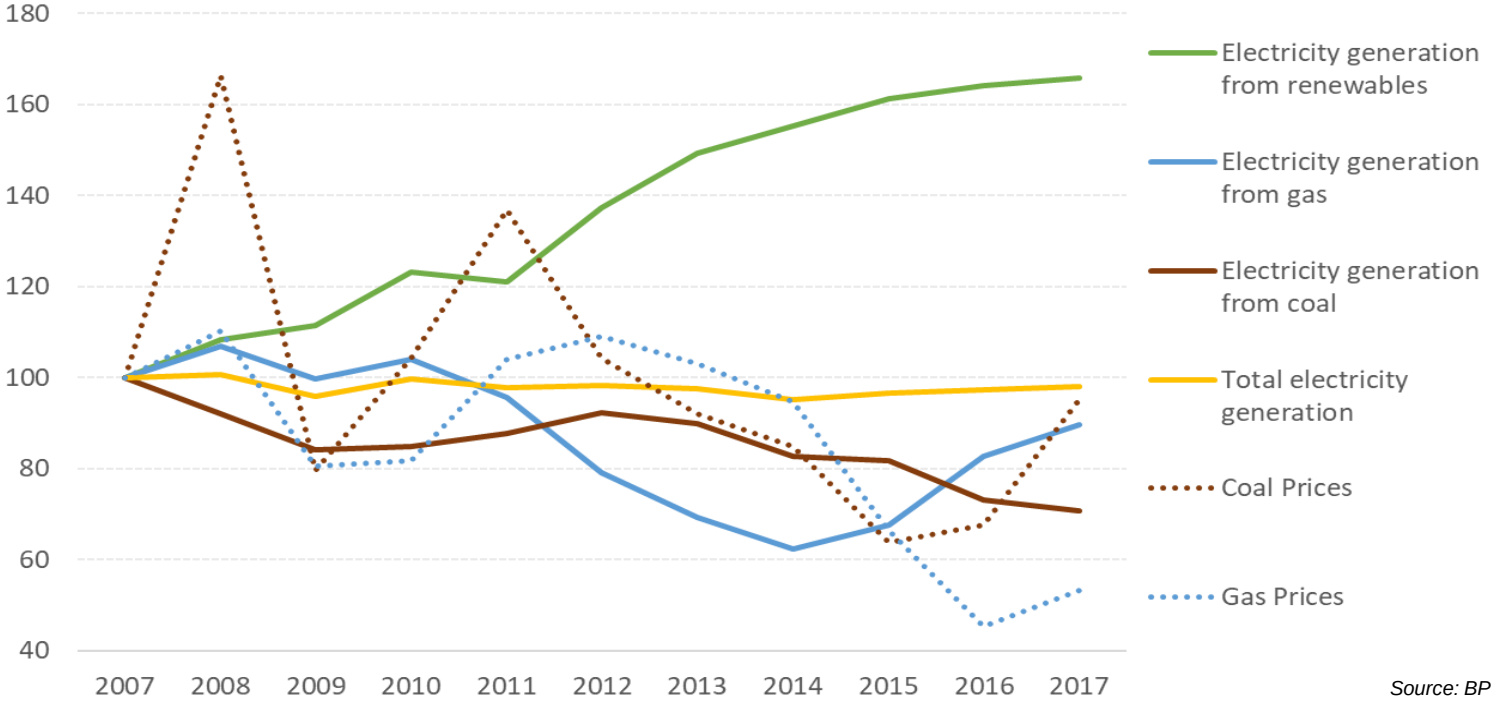
Evolution of selected economic and energy indicators in the EU, base 100, year 2007



Source: BP Databank

+ 230 GW renewables have not pushed gas fired power generation, high gas prices have accelerated fall in demand

Evolution of selected power generation indicators in the EU, Base 100, Reference year 2007

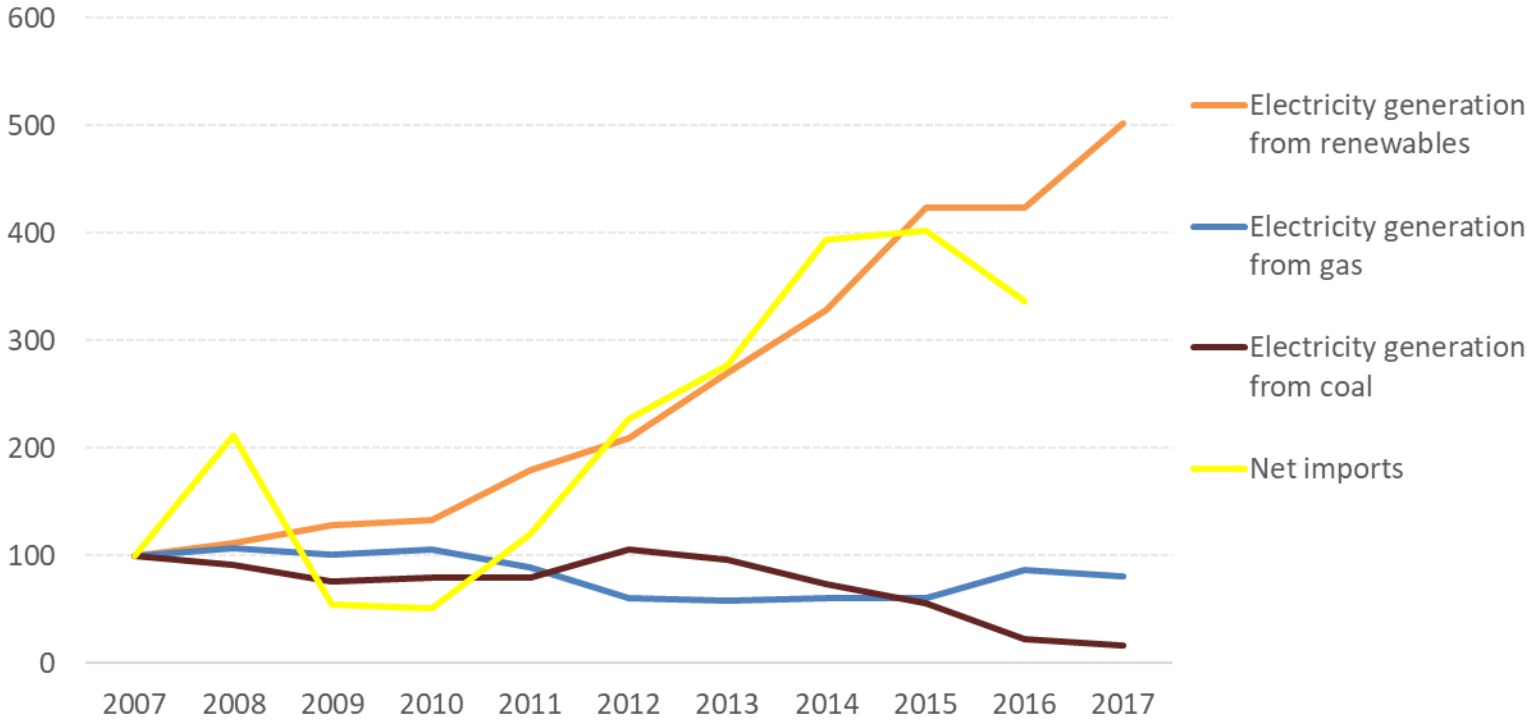


Source: BP Databank

Following cold weather, low hydro, problems with nuclear and UK coal phase out, and stronger GDP growth, gas fired power generation has nonetheless bounced back since 2015

UK coal phase out: 80% coal generation decrease only leads to 30% gas generation increase as renewables pick up

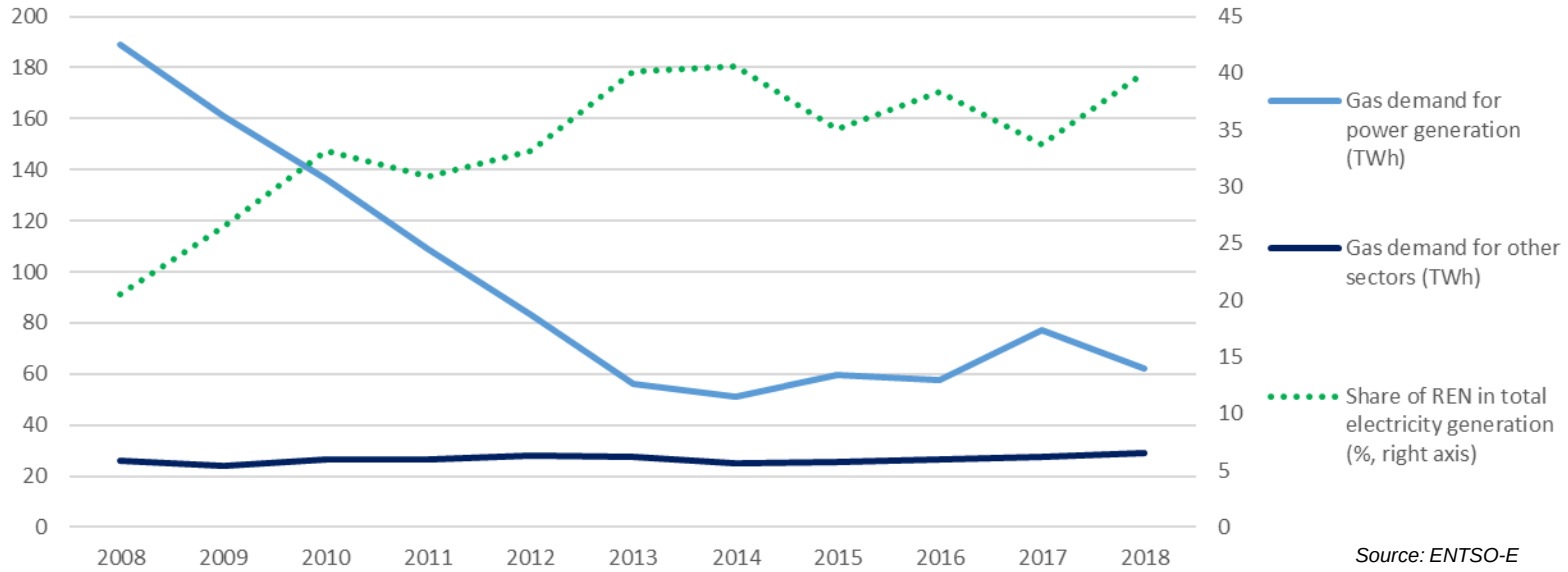
Evolution of electricity generation in the UK by type of fuel, base 100 Reference year 2007



Source: BP Databank

Spain: large renewables deployment pressures gas, yet demand varies depending on wind & hydro availability + GDP

Evolution of Spanish gas demand and share of renewables in total power generation (2008-2018)

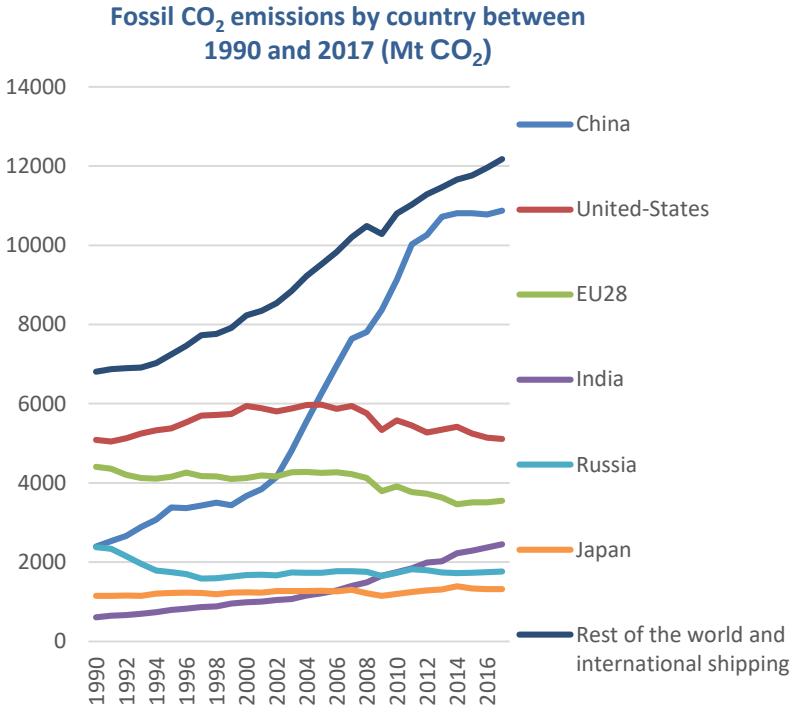


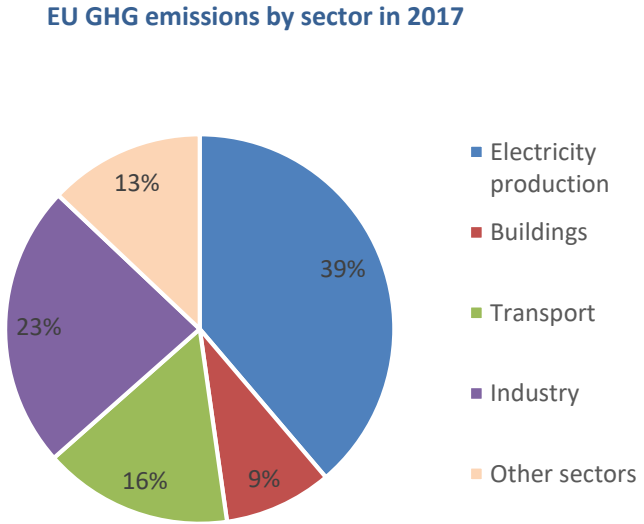
Source: ENTSO-E

The key challenge for energy systems in transition is flexibility. Intermittent renewables and variable hydro require much more flexible gas demand patterns… and are harder to predict.

2. Shaping EU gas demand: what matters for the next ten years

World on a > 3°C track, CO2 emissions keep rising, mounting pressure for a 2050 strategy with a deep decarbonization



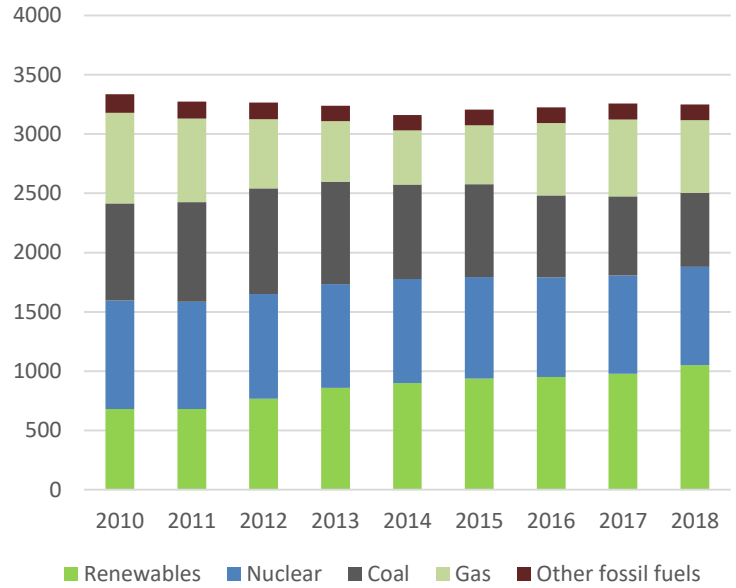


Source: Eurostat, UN

Natural gas in the EU represents 22% of TPES, 25% of its total CO2 emissions and 20% of its power sector emissions.

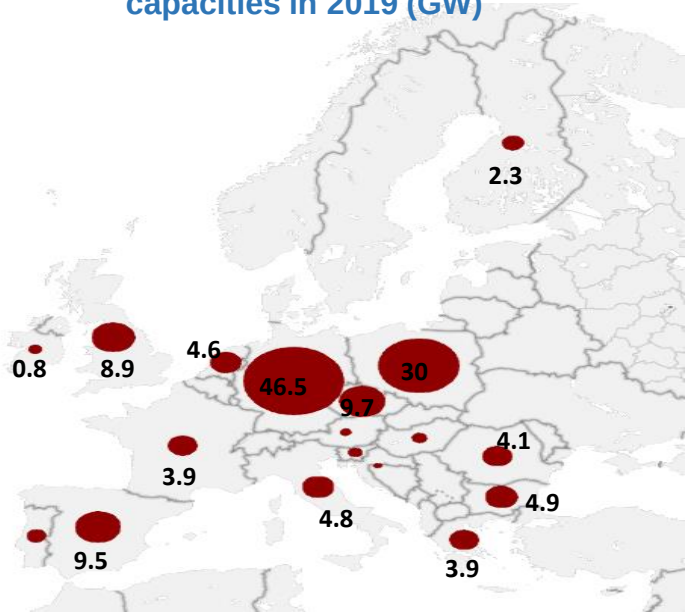
EU expected to phase out 65% of coal fired power generation by 2030, raising gas demand by about 20 bcm/y

EU power generation mix in TWh (2010-2017)



Source: Eurostat, Agora Energiewende & Sandbag

Installed coal power generation capacities in 2019 (GW)



Source: ENTSO-E Transparency Platform

Yet the call for CCGTs can also be offset by larger hydro availability, very productive renewables, interconnections as well as demand side management measures

EU emission allowance prices rise while REN auctions bids fall: bad news for gas unless it is more competitive than coal

EU ETS settlement prices, March-2018 to February-2019 (€/tCO_2)

Source: Market Business Insider, European Energy Exchange, Market Data, 13.03.19

- EUA prices at 7 years high
- Around 20€/ton since mid-August 2018
- The best-performing « commodity » in 2018

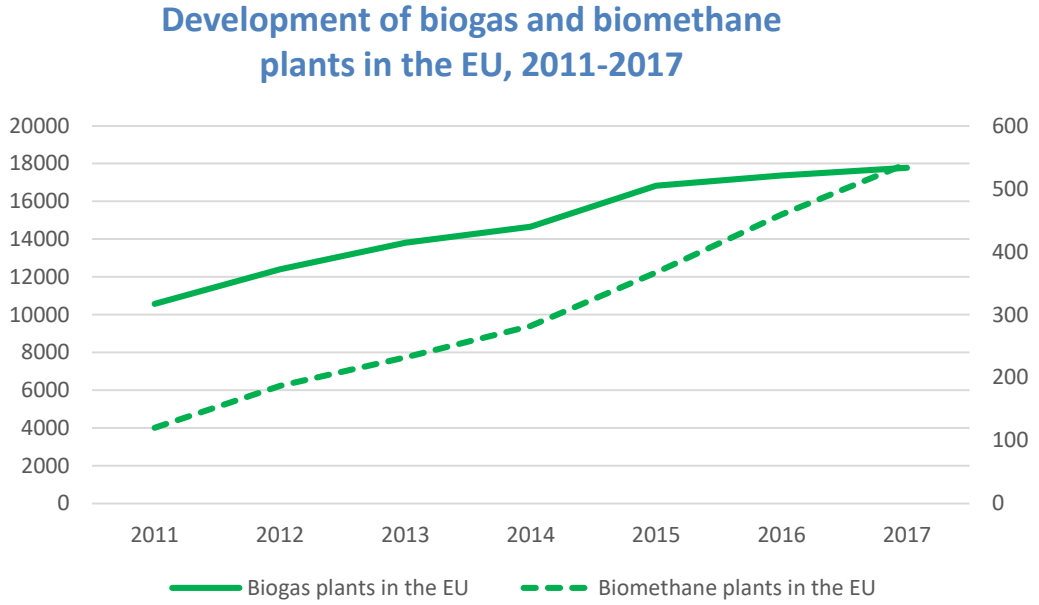
Key policy&regulatory factors affecting gas demand

- EU leader in climate governance
- 2030 upward targets for renewables (32%), energy efficiency (32,5%), 2050?
- Stronger push for **energy efficiency** policies in the residential sector
- **Transport sector** CO2 norms will foster electrification, but also biogas use
- **ETS reform** drives allowances prices higher, and wholesale power prices, yet lack of agreement on regional carbon price floor for power generation limits perspectives for higher wholesale prices and more gas fired power generation
- **Coal phase out** plans: Germany (2038), France (2021), Spain (2025), Italy (2025), Netherlands (2029), UK (2025), Austria (2025), Finland (2029), Ireland (2025), Portugal (2030)
- Uncertainty around preferred **flexibility options**: interconnectors, batteries, storage, CHP/CCGTs, demand-side ? Combinations most likely.
- Nuclear life time expansion in France, Belgium, Central Europe?
- Biomethane
- Capacity markets
- Fiscal pressure
- Social & political acceptance: Geopolitical & Environnemental risks (methane leakage, CO2 footprint)

Key market factors shaping future gas demand

- Gas price levels: rise since 2016 coupled with higher ETS prices make gas hard to compete for power generation
- CCS/CCUS: high costs and low feasibility (public acceptance, sites, insufficient carbon price)
- Gas has lost its near monopoly for providing competitive flexibility for the power generation sector (beyond hydro):
  - Wind, especially offshore, higher utilization rates & capacities
  - Variable NPPs
  - Stationary batteries, vehicle to grid
  - Interconnections
  - Power to Gas
  - Demand side management
- Green gas + LNG develop in the transport sector (maritime, heavy duty trucks)
- 2050 low carbon strategy implies new CCGTs will hardly be built unless connected to CCUS projects
- Power demand expected to be flat or only slighly increase: decarbonization will lead to higher electrification, but within limits, and energy efficiency will offset growth

Greening the gas: biomethane + H2O soften the fall in natural gas production and help support demand

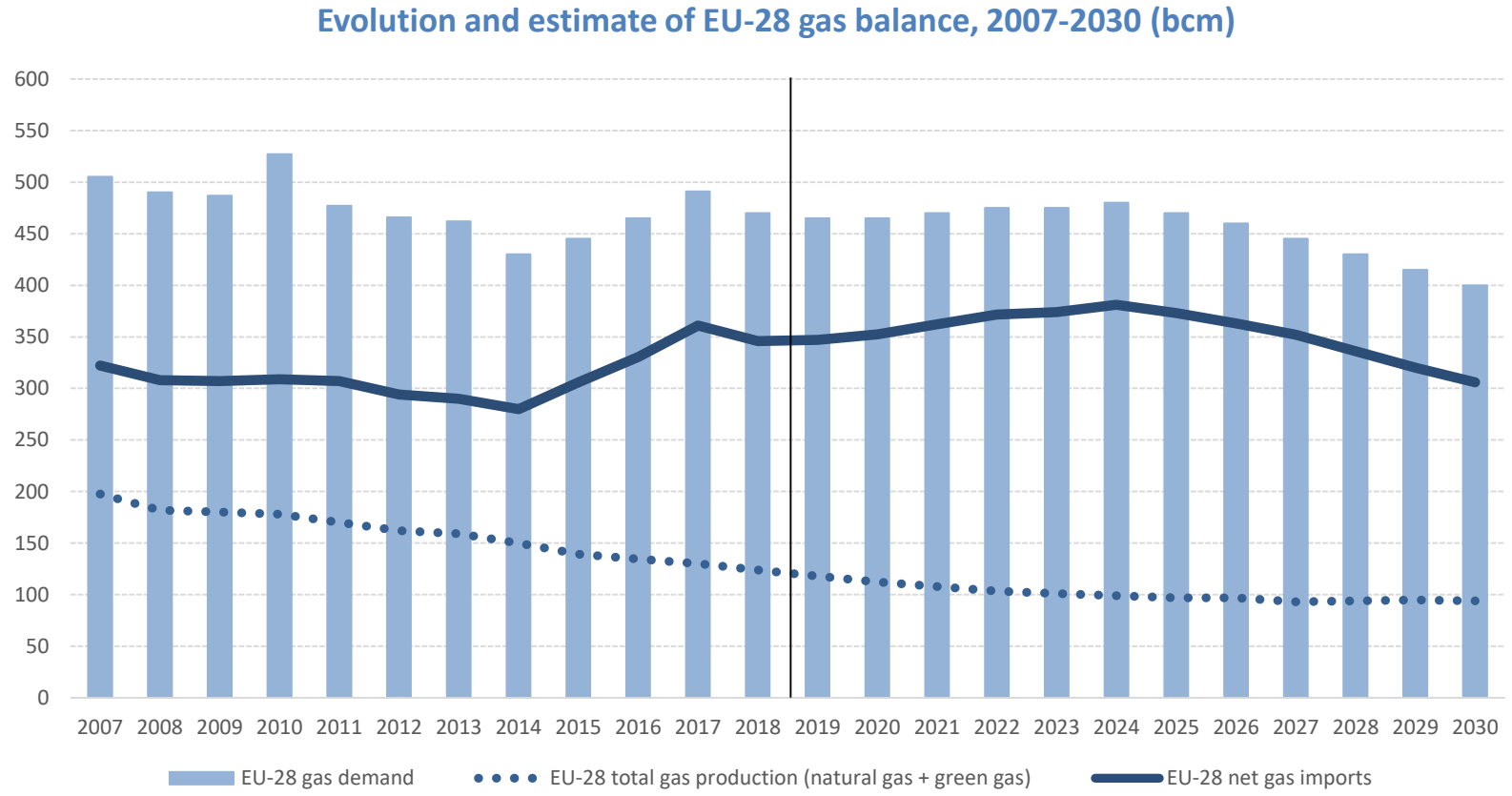


- 2 bcm/y production in 2018
- 65 GWh electricity production
- New push in Italy, France, Denmark, UK
- Costs in France must fall to reach 22 TWh by 2028

Source: European Biogas Association

EU green gas production reaches 23 bcm in 2030 and helps to push gas use in the transport sector (CNG and LNG) will increase from 2 bcm currently to 20 bcm/y by 2030, including 10 bcm of LNG, driven by heavy duty transport.

Outlook to 2030: demand overall flat until 2025, before progressively & slowly declining



Source: Ifri

Outlook uncertainties (1/2)

Stronger EU gas demand:

- Global economic slow-down + China slowing on gas expansion, leading to a global LNG glut, low prices which help push gas for power generation
- Producers decide to cut prices and opt for a volume based strategy, credibly reduce their methane emissions, start greening natural gas
- France, Belgium, Poland, UK do not build new nuclear reactors beyond those in construction & limited life time expansion
- Delays in energy efficiency efforts and slow down in renewables deployment due to costs, lacking interconnections and acceptance challenges
- Stronger extreme weather conditions strengthen peak system loads, number of cooling degree days and reinforce the role of CCGTs and gas storages for electricity supply security
- Climate change leads to lower hydro availability and a stronger call for gas-fired power generation

Outlook uncertainties (1/2)

Weaker EU gas demand:

- Russia-Ukraine gas crisis in January 2020: surge in gas prices, gas becoming a toxic fuel
- Gas prices continue to rise in the EU as pipeline exporters cut back on volumes, Asian price premium continues to rise
- Global geopolitical crisis affecting one large LNG exporter or trade route, leading to a surge in prices
- Methane emissions from natural gas are not addressed rapidly enough
- Breakthrough in small modular nuclear reactors
- Breakthrough in electricity storage technologies and demand side management systems
- Low GDP growth in Europe and low industrial production
- Climate change leads to milder winters & less heating degree days
- Coal phase out is pushed back
- Nuclear new builds and life time expansion

Conclusion

- EU gas demand will overall remain steady until 2030
- Natural gas can further expand in power generation and develop in the transport sector
- Gas demand will decline in the residential sector, most probably also in the industrial sector
- There is a likely growing volatility/seasonality in gas demand which requires greater flexibility
- Growing electrification for decarbonization may slightly increase power demand but is unlikely to have a meaningful impact on gas demand
- It is likely that the deep decarbonization will face serious challenges and delays so that gas can help fill the gaps
- Competitive gas prices is key for securing demand
- The role of natural gas will have to sharply decrease towards 2050 in a near net zero emissions trajectory
- Producers need to use the next ten years to prepare for the decarbonization of gas:
    - Reducing carbon footprint in modernizing infrastructure
    - Hydrogen injection
    - CCUS

eylmazzega@ifri.org

Ifri Centre for Energy

27, rue de la Procession, 75740 PARIS CEDEX 15
Tél. +33 (0) 1 40 61 60 00 • Fax : +33 (0) 1 40 61 60 60
www.ifri.org