



The future of gas

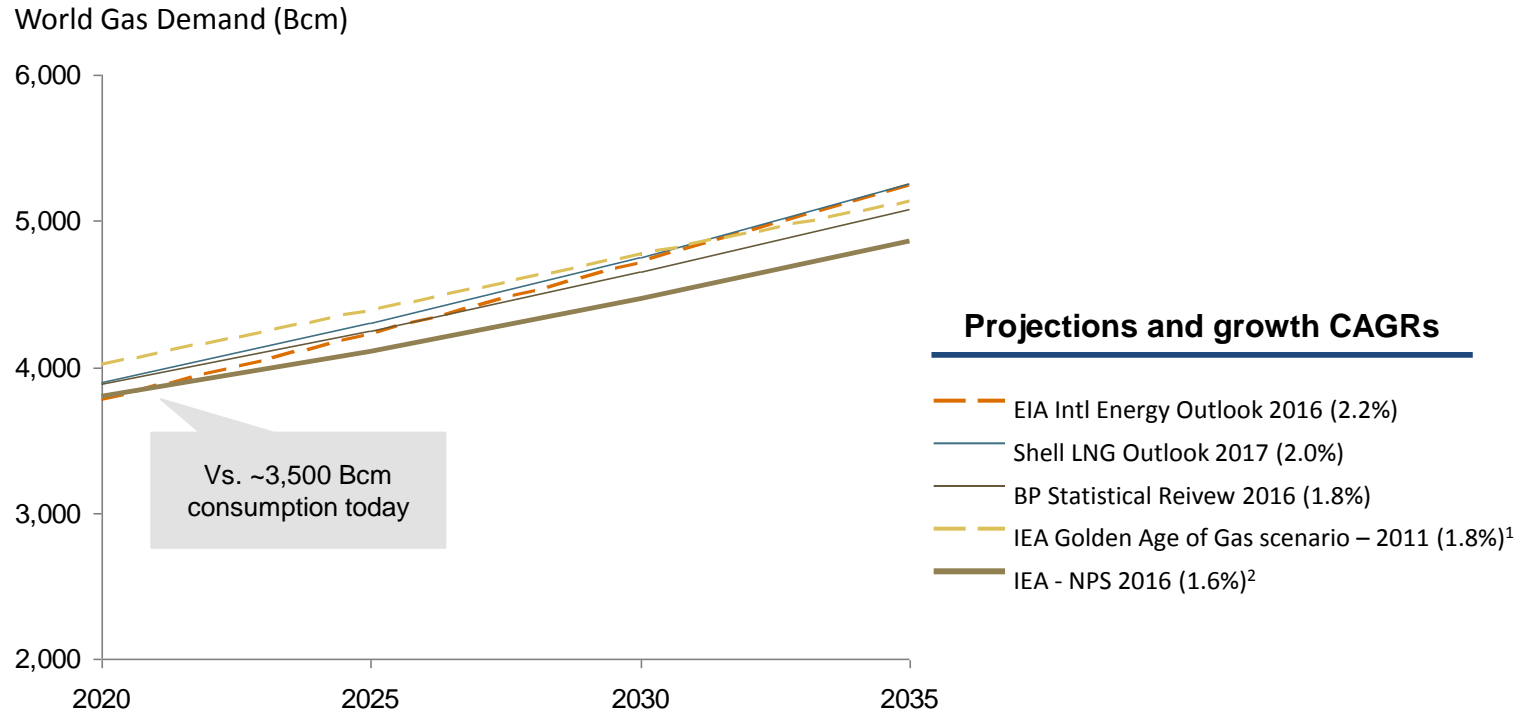
Marco Alverà, SNAM CEO

Verona, 19th October 2017

snam.it

Gas demand is expected to grow strongly to 2035

Key global gas consumption growth forecasts

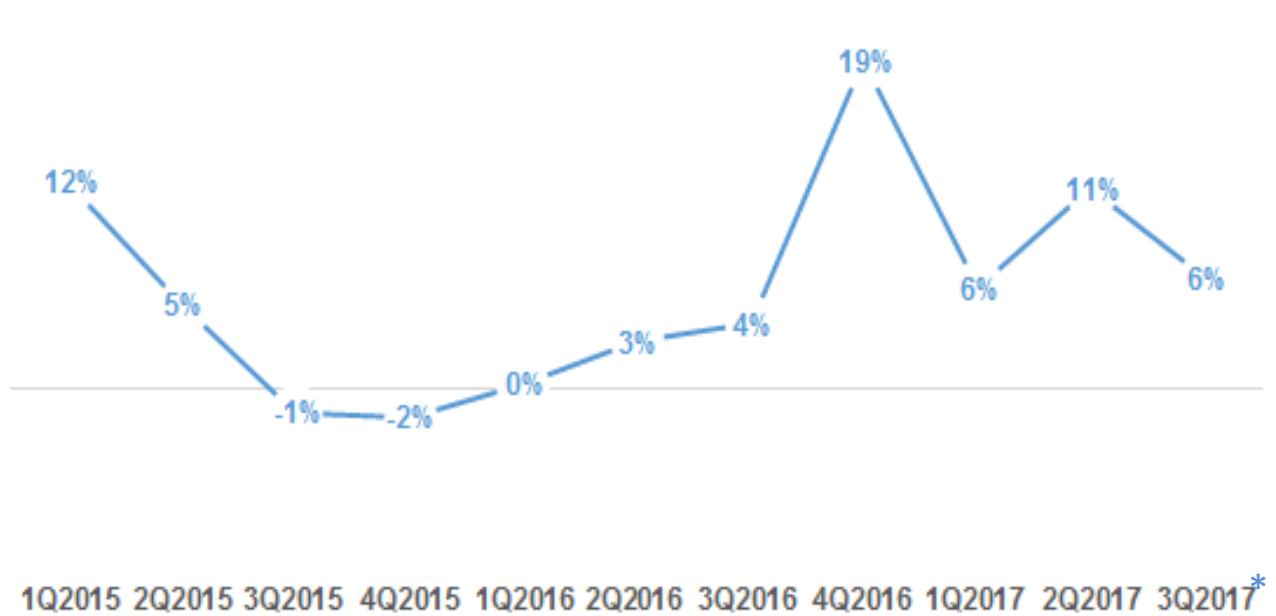


Gas expected to be the fastest growing fossil fuel, surpassing coal by 2035

- ✓ Ca. 50% of the growth to come from non-OECD Asia
- ✓ Main driver to be power generation (both new capacity and coal to gas switch)
- ✓ European consumption expected to grow slightly within this time frame (followed by a decline to 2050)
- ✓ The scenarios are not compatible with EUCO 30 policy driven scenario

In the short term, demand growth could be even stronger than forecast

EU28 natural gas demand evolution (YoY)



* Based on Jul – Aug 2017

Europe is finally getting serious about coal

- ETS reform pushing up prices of CO2
- EPS introduction stopping new coal capacity
- Increasing coal prices (+56% Jan- Aug 2017 YOY)

LNG glut may reduce prices driving coal/gas switching

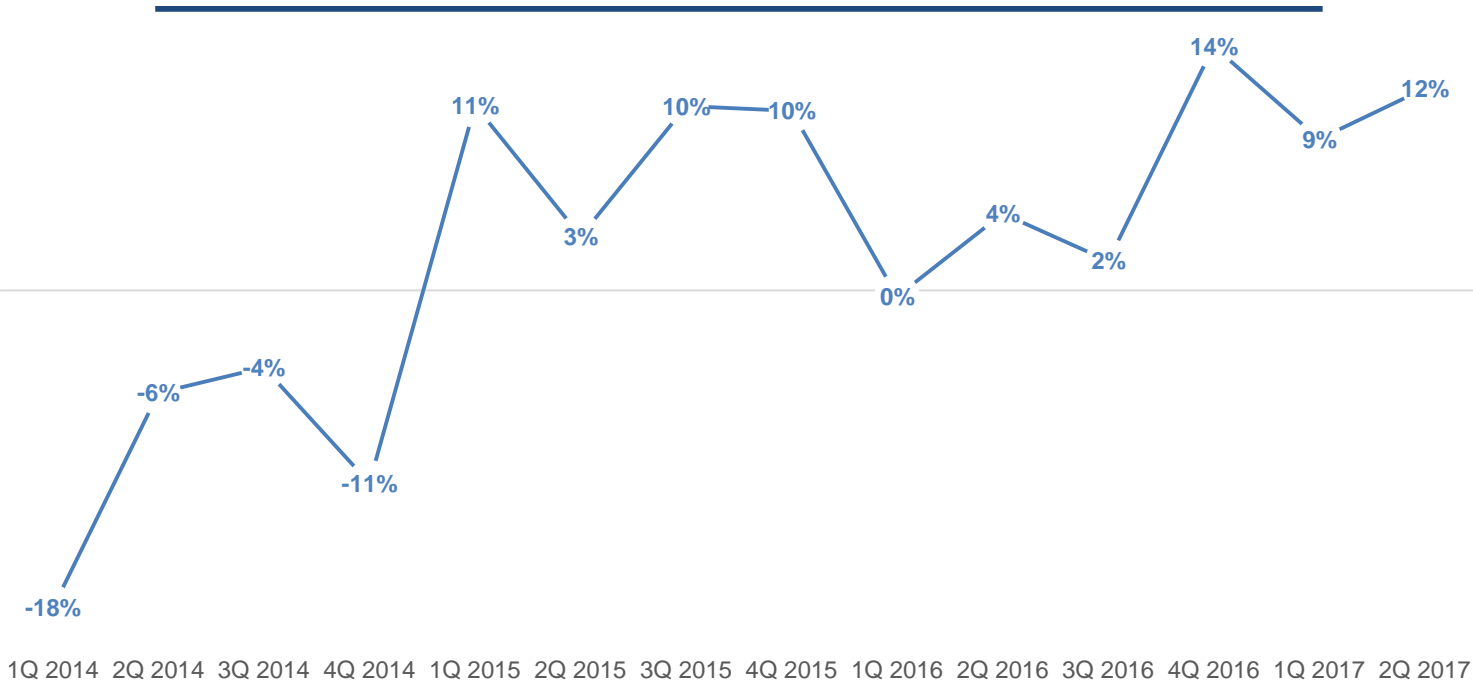
- US LNG variable cost \$4-5/Mbtu
- Low spot cargos already putting pressure on LT contracts

Asian demand supported by China (H1 consumption +15.2%)

US production growing also driven by growing associated gas supported by stronger oil prices

Italian consumption is recovering significantly

Italy natural gas demand evolution (YoY)



73.4
Bcm*

10 consecutive quarters of growth

- Industrial production recovery
- Lower imports from France

Gas demand to be further driven by:

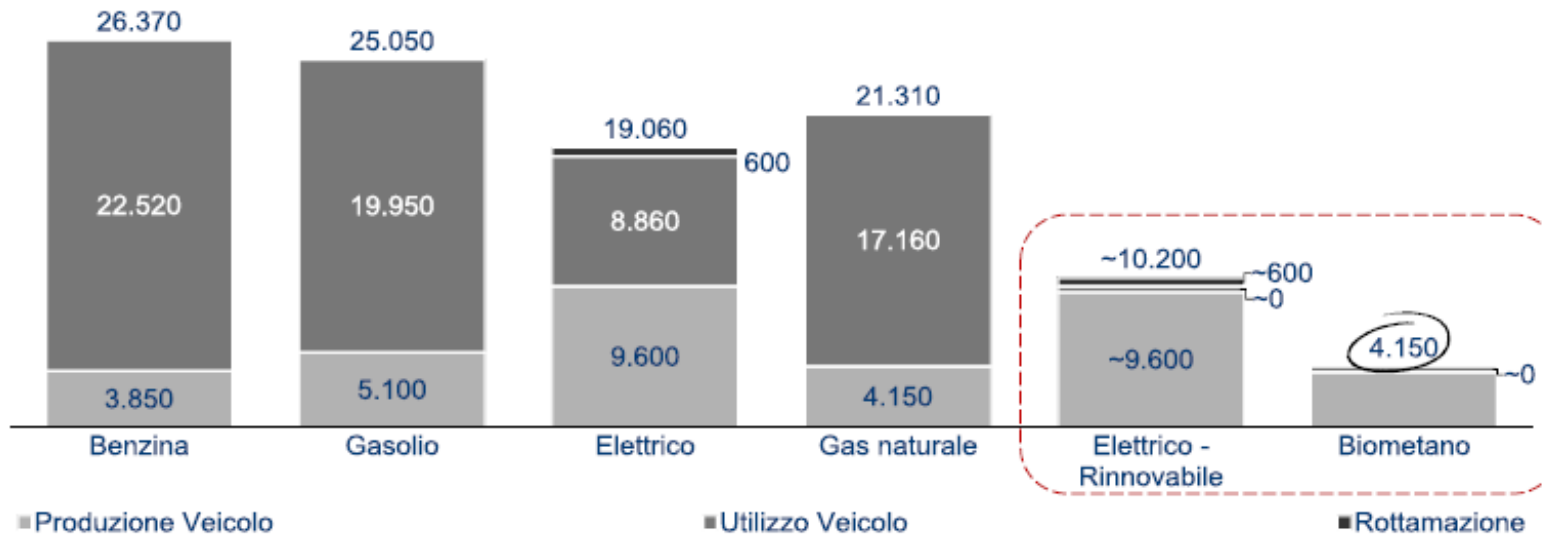
- Phase-out of coal capacity (SEN)
- Increasing momentum of gas for transport



* Forecast for 2017FY

Further upside potential from gas for transport

CO2 Emissions from vehicles (by fuel)



- CNG vehicles have CO2 emissions which are aligned with current electric vehicles
- Biomethane to CNG has the lowest emissions
- As well as CO2, natural gas vehicles virtually eliminate particulate, with positive air quality impacts
- Biomethane potential is sufficient to fuel 1/3 of Italian vehicles by 2025

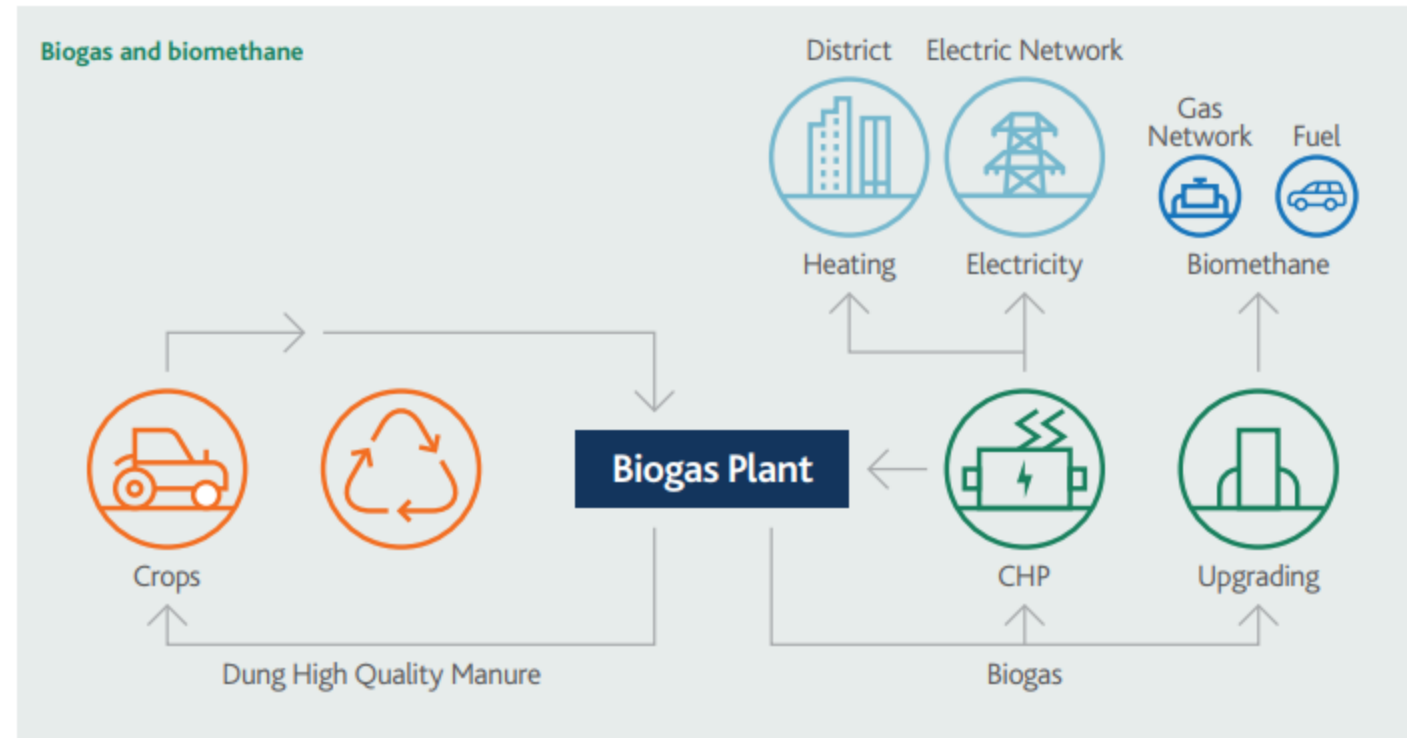
Jan-August 2017:

- 20 000 new CNG vehicles in Italy (tot. 995 K)

Renewable gas: leadership in the energy transition

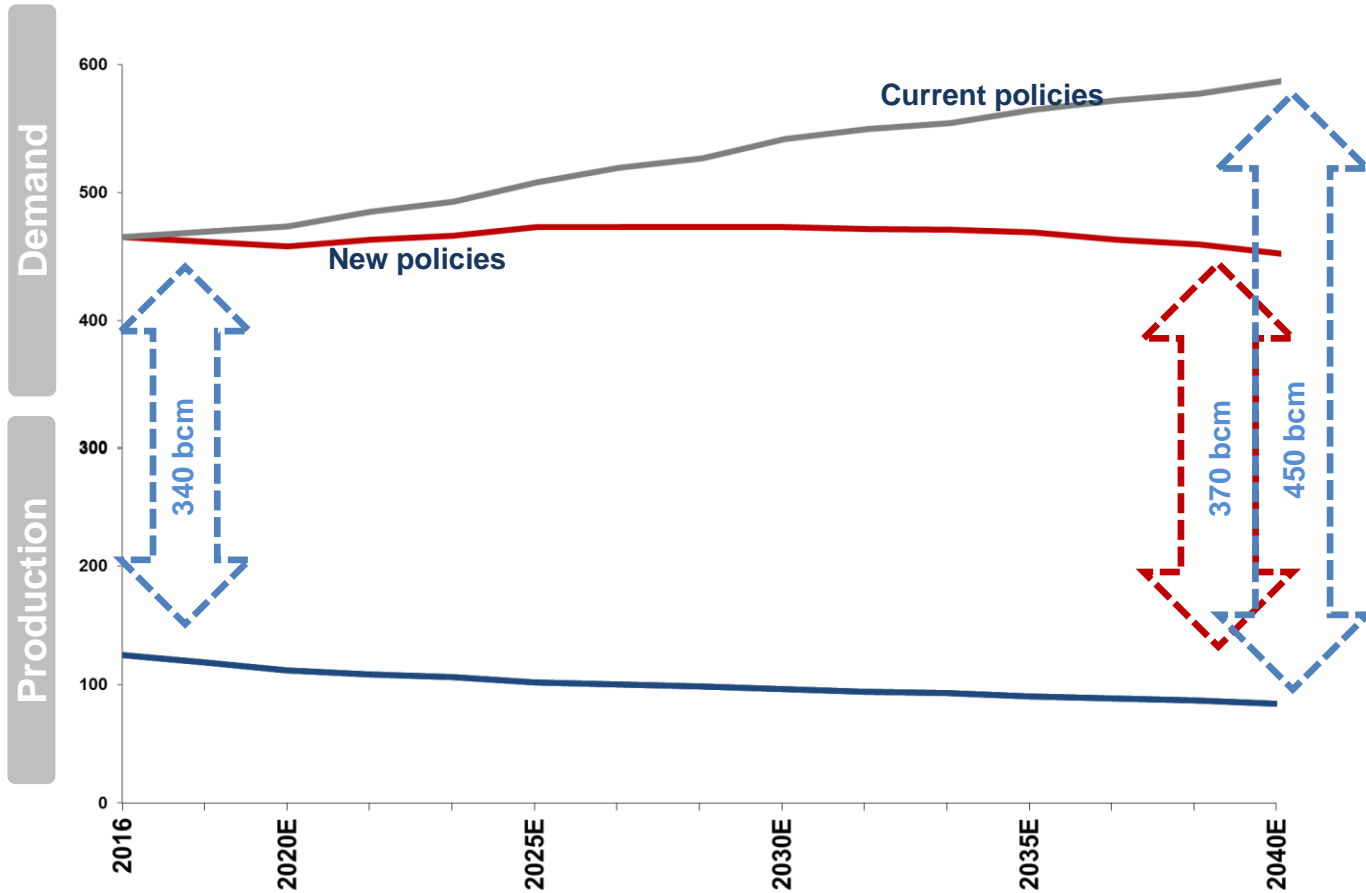
Greening gas

- ✓ Biomethane: 8bcm potential in Italy* by 2030, ca. 50bcm potential** in Europe; significant synergies from integration with solar/wind
- ✓ Power to Gas
- ✓ Hydrogen distribution
- ✓ CCS
- ✓ Methane leakage



Where will European supply come from?

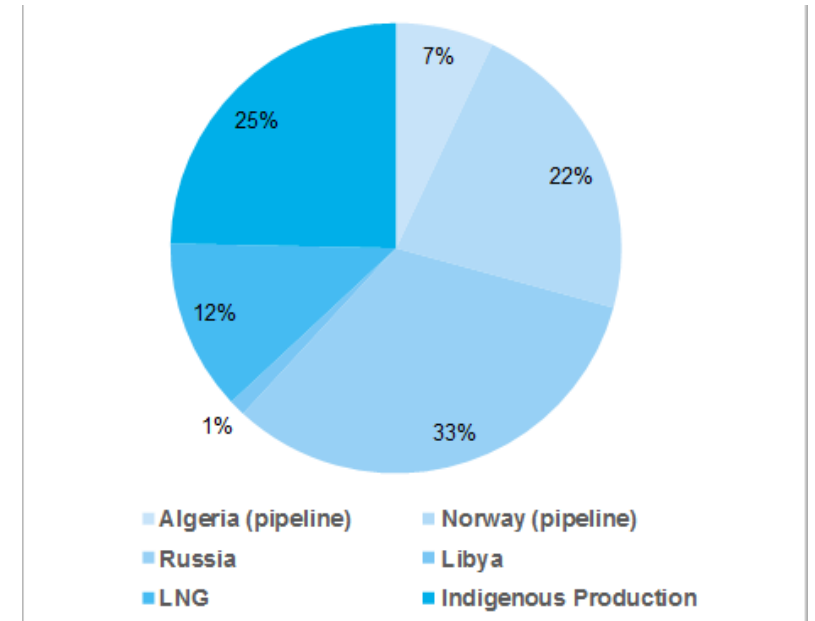
Import requirements EU



Source: World Energy Outlook 2016

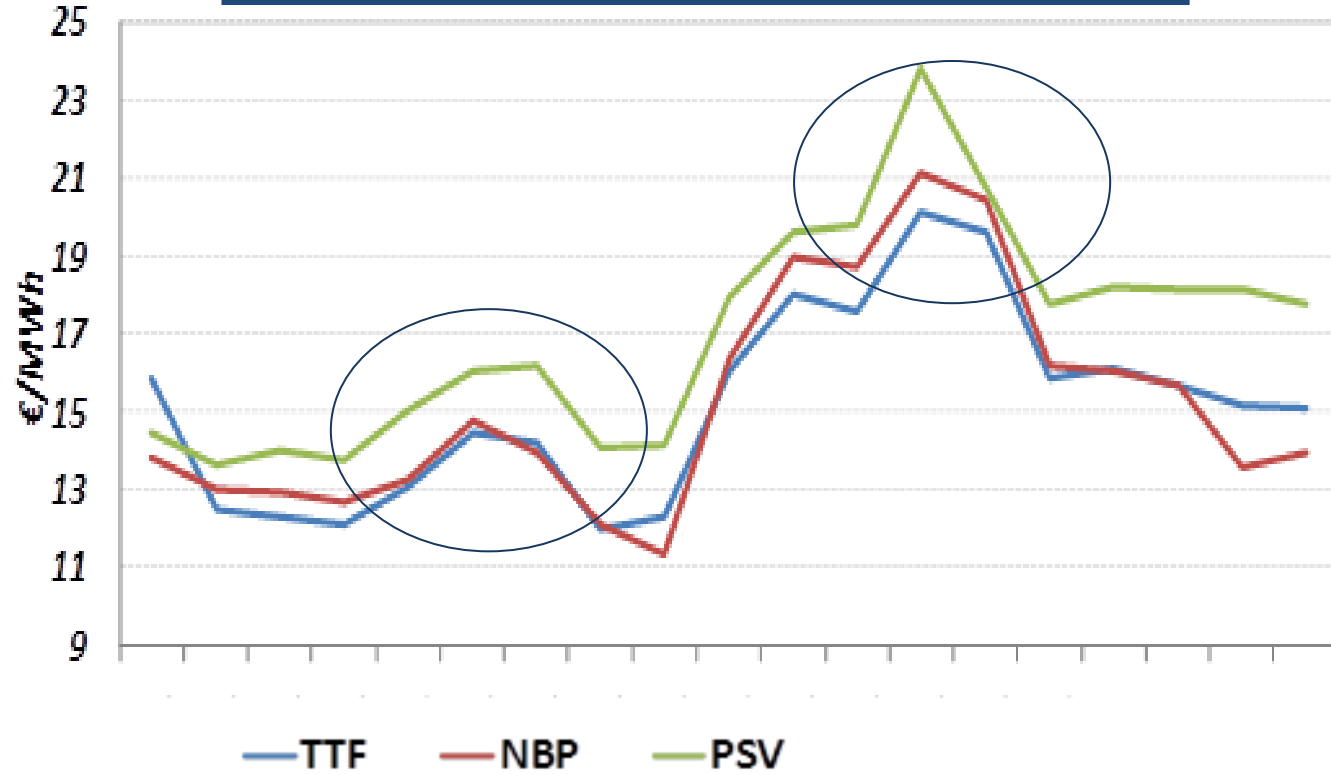
Supply sources H1 2017

- Gas demand increased by 8% (+19 bcm) covered by increased import (+15 bcm) and storage withdrawal (+4 bcm)
- Domestic production stable with potential decrease in the 2nd half due to more stringent cap on Groningen field

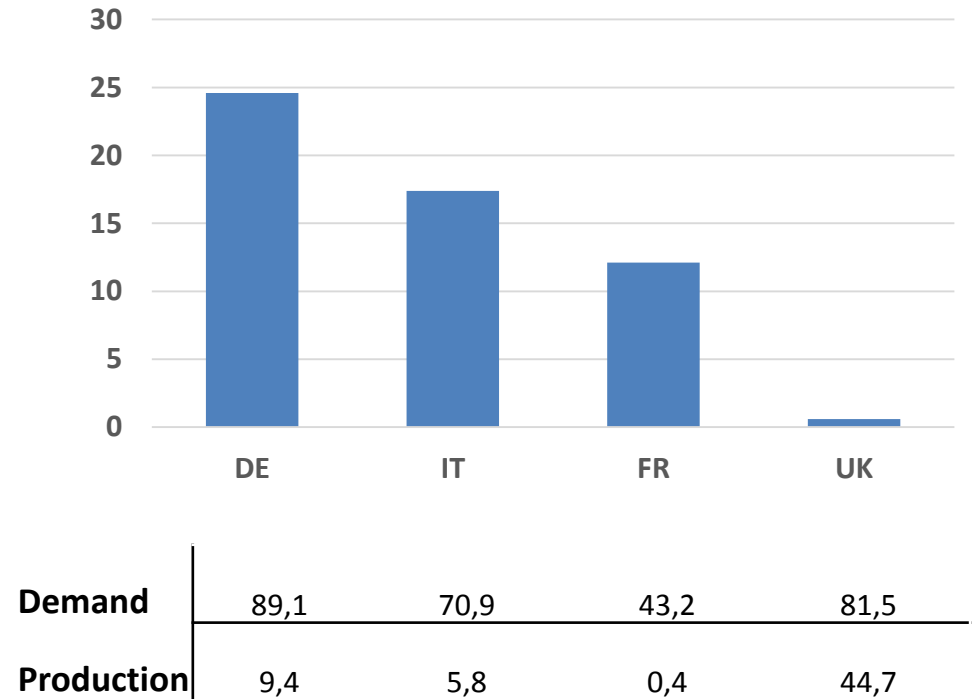


Making supply more secure and more competitive: storage

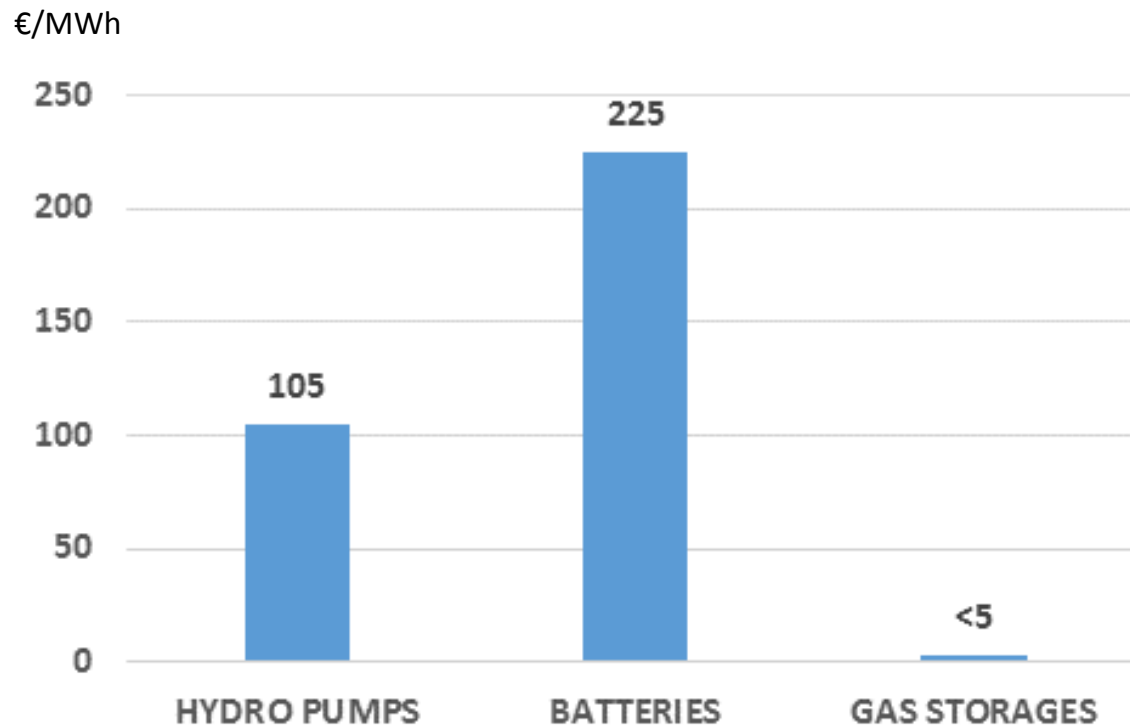
EU gas hub prices(€/MWh)



Main storage capacity EU (Bcm/a)



The cost of storing energy as natural gas



- Natural gas storage is the cheapest energy storage solution
- **Hydro pumps could be a solution only if located in areas where overgeneration by RES is concentrated**
- **Batteries are not yet competitive in term of costs in particular considering high voltage electric grid applications**

Other pillars of supply security: sources, routes, interconnections

