

Policy & Industry:

Still fitting together?

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The Triple "A" Argument for Natural Gas

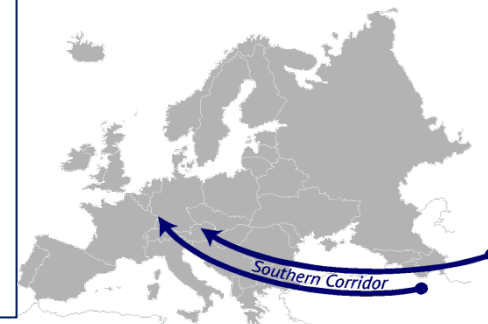
ACCEPTABLE

- ▶ Natural gas produces no sulfur or fine dust, less nitrogen oxide than coal, and only half the amount of CO₂
- ▶ Contribution to achievement of EU 2020 Targets : 20% lower CO₂ emissions through combination of RES & Gas



ABUNDANT

- ▶ Global volumes of sediments capable of producing natural gas commercially are at least twice the volumes of those capable of oil production (incl. unconventional gas)
- ▶ Recoverable gas resources amount to approximately 800 tcm which equals 250 years of production at 2010 levels
- ▶ Diversification of sources: North Sea, North Africa, Russia, Caspian Region, Middle East & unconventional gas



AFFORDABLE

- ▶ Capital cost of gas fired plants equals 1/2 of coal, 1/3 of nuclear, 1/5 of onshore wind
- ▶ Affordable option for countries in order to reduce greenhouse gases



Gas to become the most important Energy Source in the future

EU-27+Turkey primary energy demand

mn toe p.a.



- ▶ **Oil and gas >50% of energy demand** in 2035 (today: 63%)
- ▶ **High growth of gas demand** (main driver is power sector)
- ▶ Europe needs **additional gas imports of up to ~150 bcm p.a.** until 2020

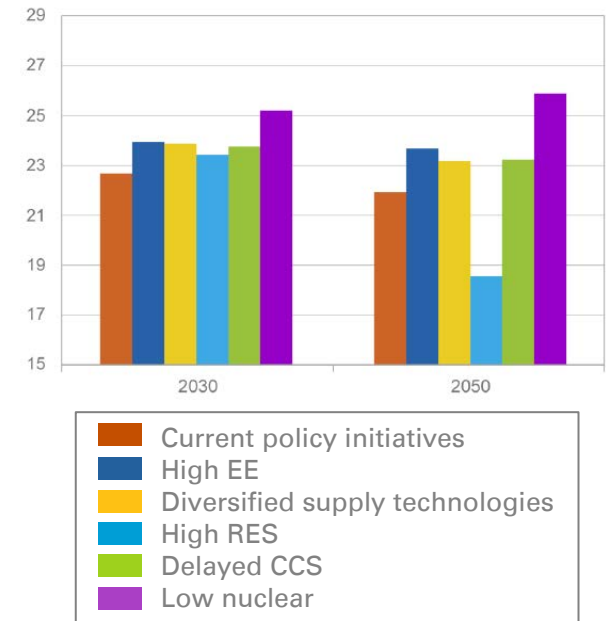
■ Increasing
 ■ Decreasing

Current Key Topics in the Gas World

Challenges

- ▶ **Share of gas** in total EU primary energy consumption **challenged** by other energy sources; forecasts for 2030 and 2050 range from 22.7% to 25.2% and 18.6% to 25.9% respectively
- ▶ Development of **new technology necessary** in order to be competitive
- ▶ **Clear policy target:**
 - ▶ even though gas has been acknowledged a fundamental role in the EU energy mix, gas consumption will drop after 2030 if CO₂ emissions goals are not met
 - ▶ Rationale for new gas infrastructure, but who will pay for stranded costs ?
- ▶ **Focus on Security of Supply:**
 - ▶ 01/2009: Supply interruption in/by Ukraine triggers gas crisis
 - ▶ 02/2012: Cold snap causes rise of hub prices & media attention
 - ▶ Diversification of sources as means of securing supply
 - ▶ New natural gas resources in Caspian Region and Middle East
 - ▶ Alternative ways of supply to existing routes

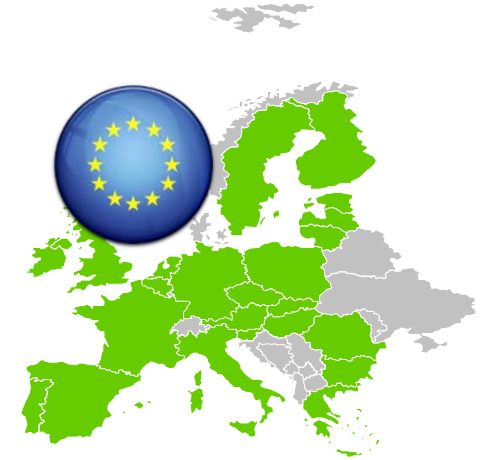
Share (%) of Gas in different EU 2050 scenarios



Political Support for Natural Gas needed

3rd Energy Package defines internal EU market

- ▶ a new market model has to be set up (ownership unbundling, entry/exit systems, introduction of ACER, etc.)
- ▶ main objectives are the completion of an efficient internal gas market and consumers' interests



Consistent targets for development of natural gas beyond EU27 borders needed

- ▶ stable legal framework
- ▶ clear statement from EU regarding gas delivery as a strong contributor
- ▶ political and economical support for infrastructure investments (development of new supply sources & transportation routes, CCGT as backup of RES)



Role of Gas in the future EU Energy Mix

Gas – Solution for the future European energy



Uncertain future (Impact of Fukushima)

- ▶ increasing interest in alternatives to nuclear energy since 2011
- ▶ referendums in Italy and Switzerland, moratorium in Bulgaria
- ▶ nuclear phase-out of Germany & consequent increase of RES from 17% to 35% by 2020
- ▶ EU strategy targets regarding climate changes and energy

Solution

- ▶ From “Bridging fuel” and “Transition fuel”, to “Necessary” fuel

Gas – Symbiosis fuel

Symbiotic solution with renewables

- ▶ fluctuating energy production from RES (e.g. wind/solar) require availability of suitable back-up power plants

Power to Gas

- ▶ surplus energy generated by RES is used to convert electricity into gas (H₂ or CH₄) by the means of electrolysis or methanisation

Innovative technologies in the gas industry