

4<sup>th</sup> December, 2018

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# Role of gas in the clean energy world

„BEST 2018” conference

ORBÁN Gábor

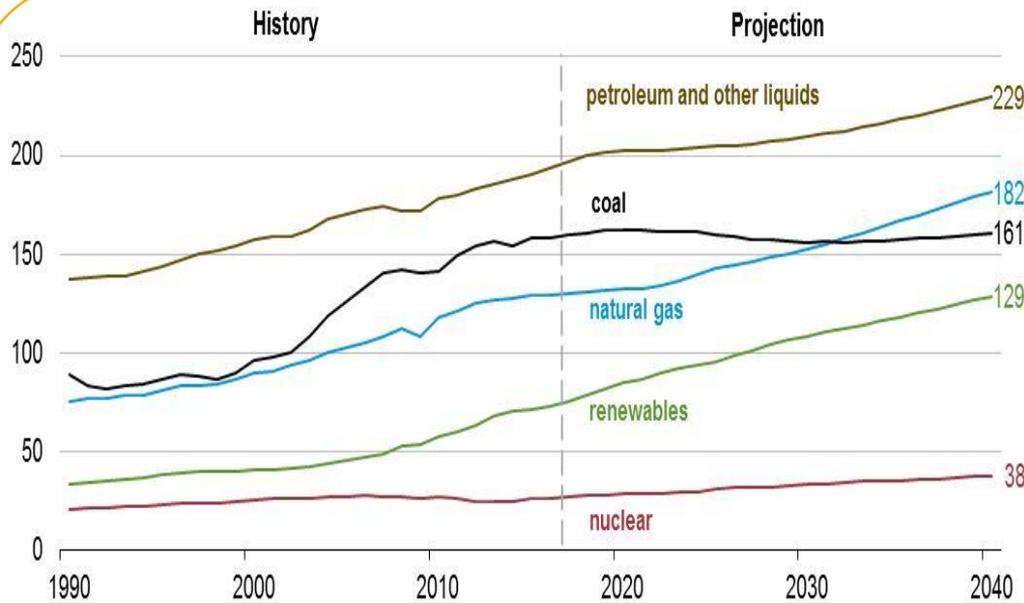
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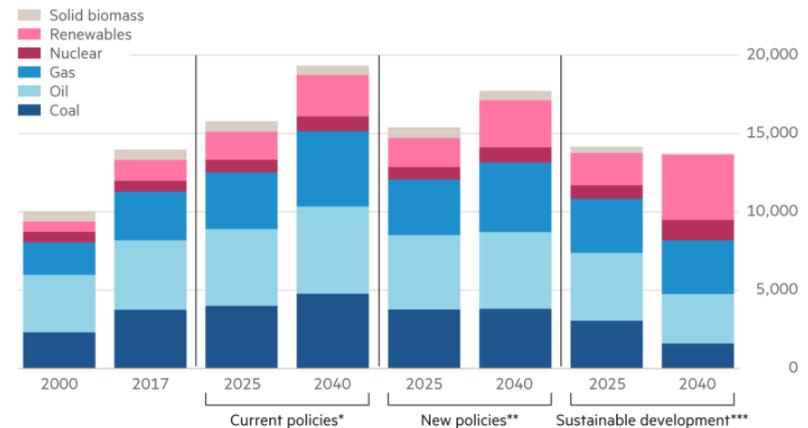
# GAS is an essential component in a global transition away from more carbon-intensive energy sources



Source: EIA, International Energy Outlook 2018

## Changing the mix

World primary energy demand by fuel and scenario (millions tonnes of oil equivalent)



\*Forecasts based on existing policies \*\*Forecasts based on existing policies and announced policy intentions

\*\*\*Forecasts based on approaches to achieve internationally agreed objectives

Sources: OECD; IEA

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- **Natural gas is expected to overtake coal as the world's second-largest energy source after oil by 2030**, as more countries seek to curb the air pollution often caused by coal-fired power plants, as demand for electricity ramps up.
- **Share of coal is forecast to fall from about 40 per cent today to a quarter in 2040**, renewables will only grow to just over 40 per cent from a quarter now. This means that fossil fuels — namely gas — will still be relied on to meet the sheer level of energy demand.

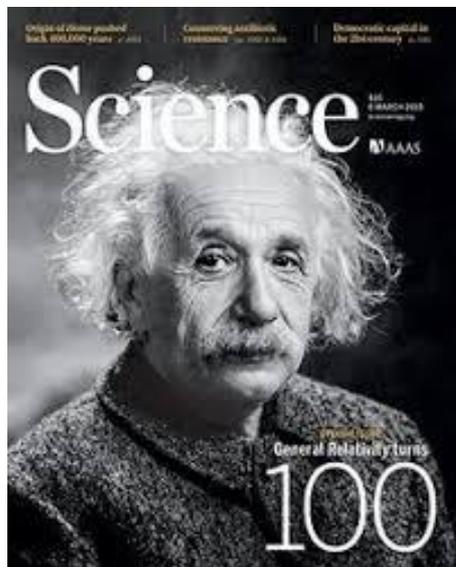
# GAS is an essential component in a global transition away from more carbon-intensive energy sources

- Wood Mackenzie says the **moment when the world shifts from the age of oil and gas to renewables could occur by 2035**, with the adoption of clean power and electrified transport increasing rapidly after this point. At this time, close to 20 per cent of global power needs will be met by solar or wind, displacing the equivalent of about 100bn cubic feet a day of gas demand.

- **BRIDGE THEORY:** In its role as a bridge, natural gas seems to have a **comfortable future**. First, it will **replace coal and nuclear “baseload” plants**, and then, as renewables grow to supply the bulk of power, it will provide flexibility, **filling in the gaps where variable renewables (wind and solar) fall short**. By playing these multiple roles, natural gas will long outlive coal and prove useful well into the latter half of the 21st century. It will enjoy a long, slow exit

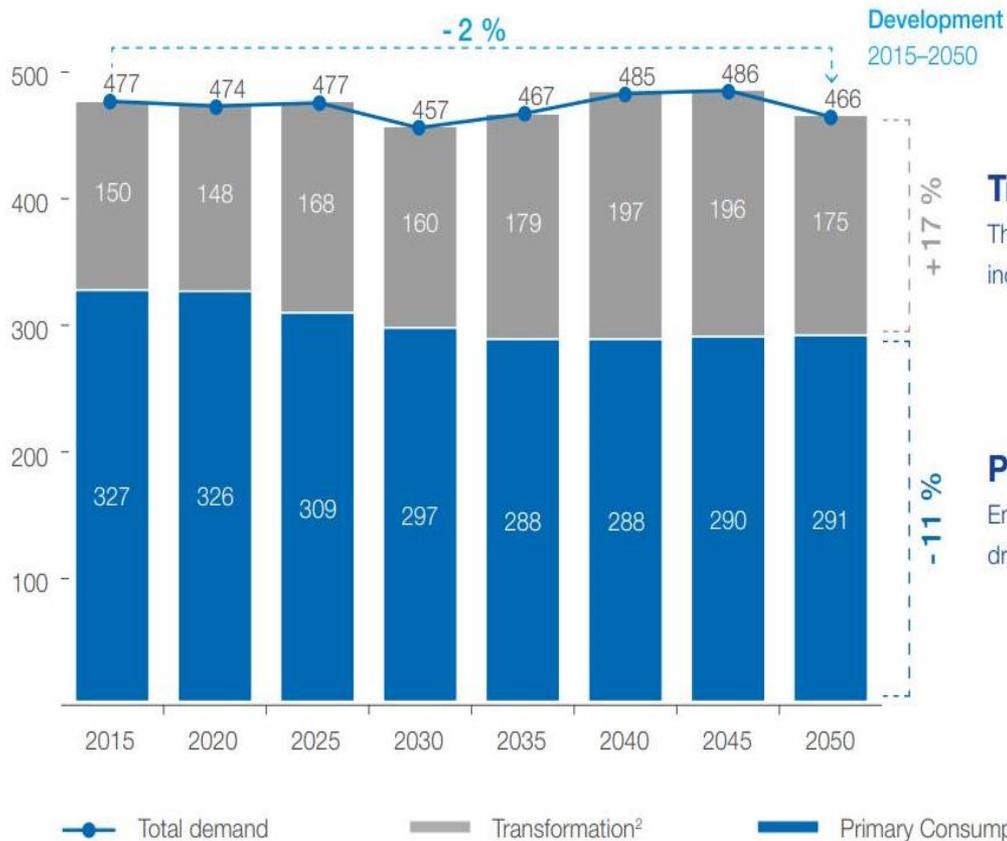
- **CONTRA THEORY:** The cost of natural gas power is tethered to the commodity price of natural gas, which is inherently volatile. **The price of controllable, storable renewable energy is tethered only to technology costs, which are going down, down, down**. Recent forecasts suggest that it may be **cheaper to build new renewables+storage than to continue operating existing natural gas plants by 2035**

# NEW THREAT: methane emission



**Methane emissions from the U.S. oil and natural gas supply chain were estimated using ground-based, facility-scale measurements and validated with aircraft observations in areas accounting for ~30% of U.S. gas production.** When scaled up nationally, our facility-based estimate of 2015 supply chain emissions is  $13 \pm 2$  Tg/y, equivalent to 2.3% of gross U.S. gas production. This value is ~60% higher than the U.S. EPA inventory estimate, likely because existing inventory methods miss emissions released during abnormal operating conditions. Methane emissions of this magnitude, per unit of natural gas consumed, produce radiative forcing over a 20-year time horizon comparable to the CO<sub>2</sub> from natural gas combustion. Significant emission reductions are feasible through rapid detection of the root causes of high emissions and deployment of less failure-prone systems.

# DEMAND growth vs. FLEXIBILITY partner



## Transformation:

Thanks to its efficiency, gas gradually increases its share in power generation

## Primary consumption:

Energy efficiency measures progress drive down overall heating demand

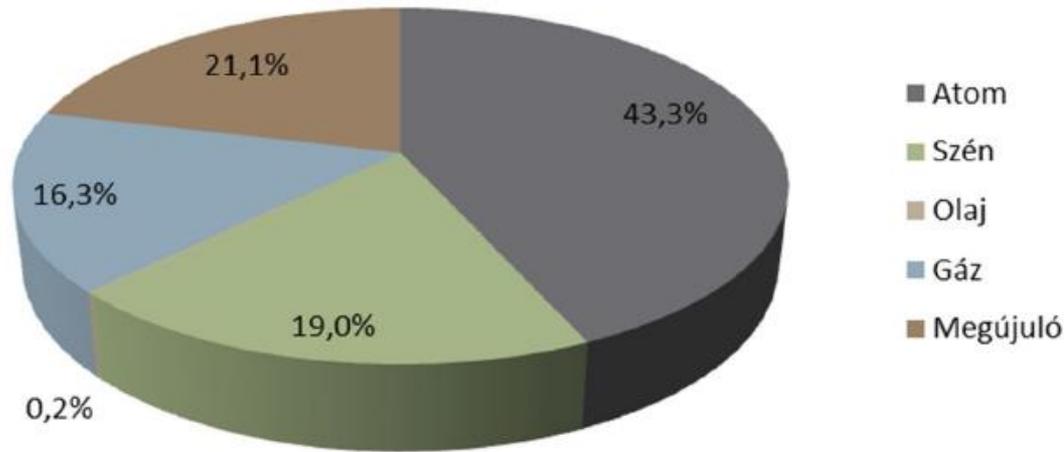
**EU-28 gas consumption will be roughly the same in 2050 but the flexibility needs will be much higher to balance the renewables**

Source: Prognos (2017). Current Status and Perspectives of the European Gas Balance – Analysis of EU and Switzerland.

**- China becomes the largest natural gas importing country.** An increasing role for natural gas – defined as a clean energy source – in every sector of China’s economy is backed by strong policy support from the 13th Five-Year Plan. China’s demand grows at an average of 8% per year

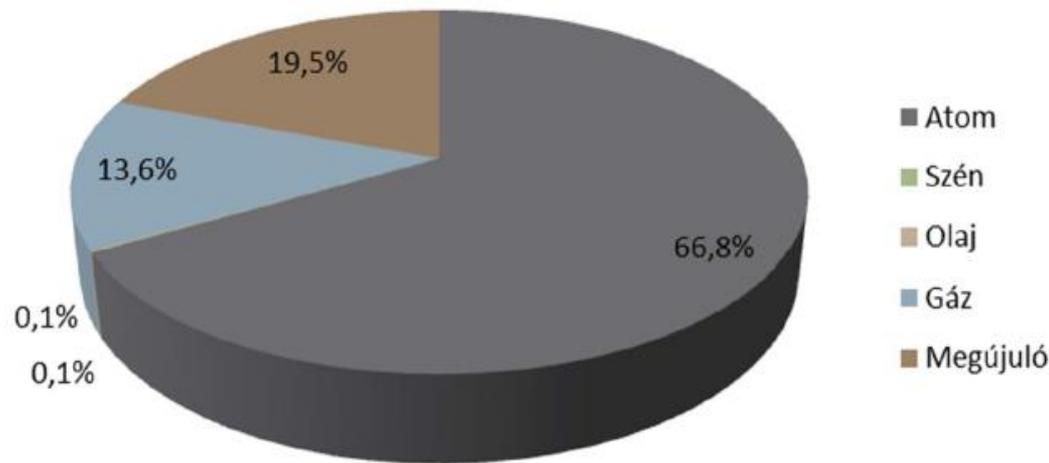
- In the EU the question remains: **from whom we will buy the gas** and right now two players are on the stage: Gazprom and the global LNG

# FELXIBILITY NEED case study: HUNGARY



9. ábra A hazai bruttó villamosenergia-termelés forrásmegoszlása – optimista forrásoldalú változat (2022)

Source: MAVIR, A Magyar Villamosenergia- rendszer közép- és hosszú távú forrásoldali kapacitásfejlesztése 2017.



13. ábra A hazai bruttó villamosenergia-termelés forrásmegoszlása – optimista forrásoldalú változat (2032)

**In 2032 66.8%  
baseload  
NUCLEAR and  
19.5% super  
volatile  
RENEWABLES  
shall be  
balanced with  
13.6% Gas**

**Thank you for your attention!**