

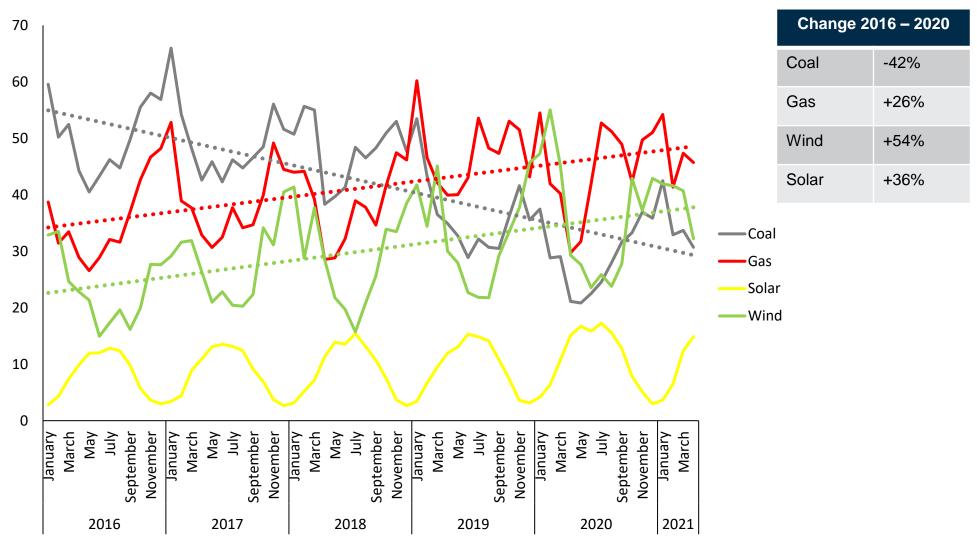
# THE ROLE OF RUSSIAN GAS IN THE EUROPEAN ENERGY TRANSITION RISK MANAGEMENT IN ENERGY 2021

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#### EU Power generation trend Wind and gas generation have started to displace coal

Europe power generation by source (gas, coal, wind, solar) TWh



Source: Rystad Energy research and analysis, Entsoe



### European policies Extensive coal and nuclear phaseouts – increase the need for gas and renewables

Western Europe has recognized a new energy reality.

**Coal phaseout** 

The following countries have set specific plans to phase out coal power generation:

- Austria 2020
- France 2022
- United Kingdom 2025
- Italy 2025
- Netherlands 2030
- Portugal 2030
- Finland 2030
- Germany 2038

Most recently (Jan 2019), Germany announced that they will entirely phase out coal by 2038.



#### **Nuclear phaseout**

Tension around nuclear power were significantly high after Fukushima in 2011.

Germany decided to immediately close 7 of its oldest plants, also phasing out the remaining by 2022.

The following countries have vowed to fully remove nuclear from the power mix:

- Germany 2022
- Belgium 2025
- Netherlands 2033
- Switzerland 2034

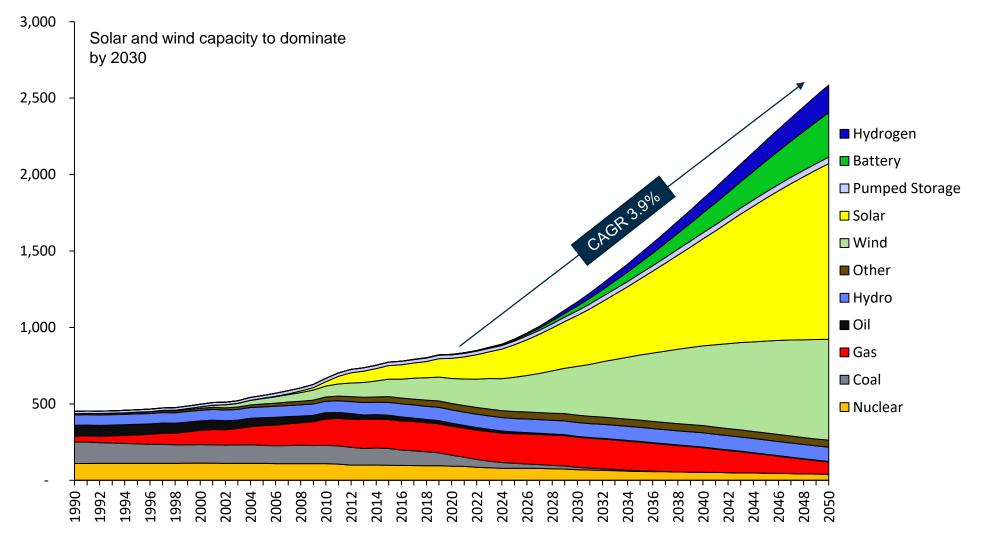
Even France (75% Nuc) has stated a policy to reduce nuclear power to 50% of the electricity mix by 2035.

Source: Rystad Energy research and analysis; Agora Energiewende; Sandbag; Reuters. \*International Nuclear and Radiological Event Scale.



### Massive capacity growth needed to decarbonize the power sector

EU9\* installed power generation capacity 2010-2050  $\ensuremath{\mathsf{GW}}$ 

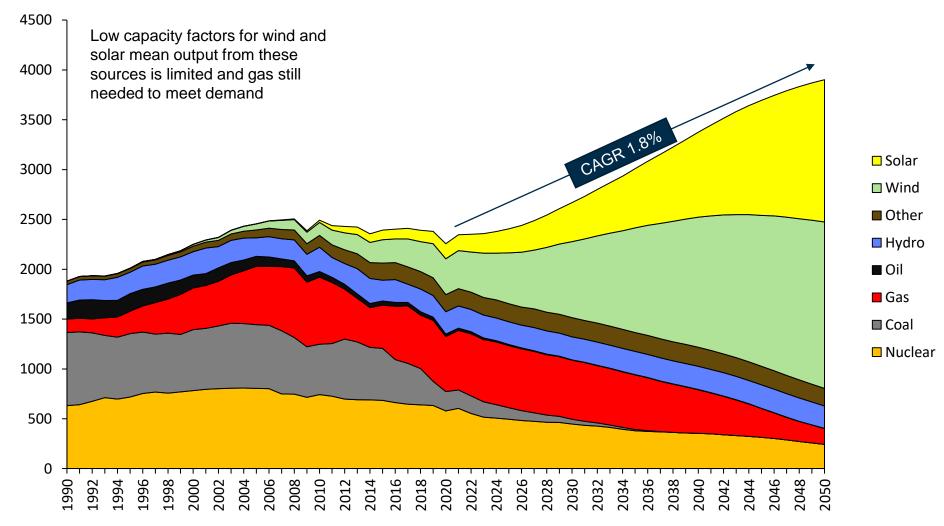


Source: Rystad Energy research and analysis, Rystad Energy RenewableCube, Eurostat, IEA \* EU9 included the following countries: UK, NL, BE, FR, DE, IT, ES, AU, PT



## Strong generation growth needed to meet demand, solar and wind to dominate generation in 2050

EU9\* Gross Power Generation by energy source 1990-2050  $\mathsf{TWh}$ 

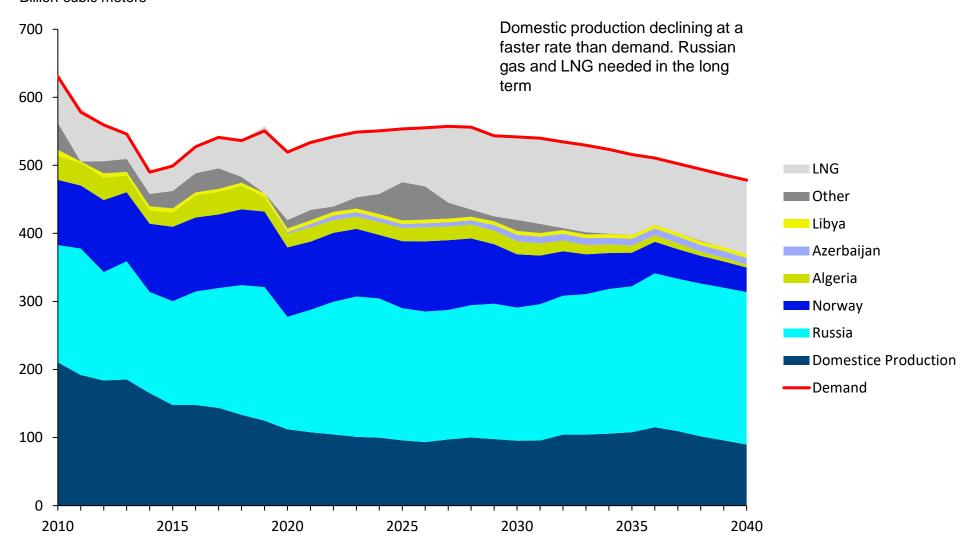


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### Russian gas to be needed in the long term to help balance the European market

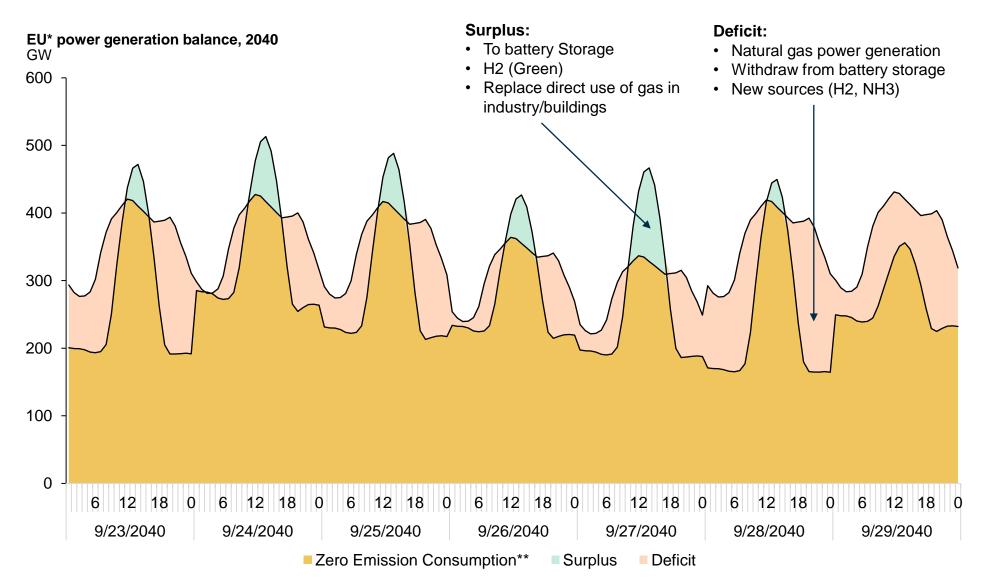
Europe natural gas balance Billion cubic meters





Source: Rystad Energy GasMarketCune

### Gas power, batteries and hydrogen needed for peak shaving

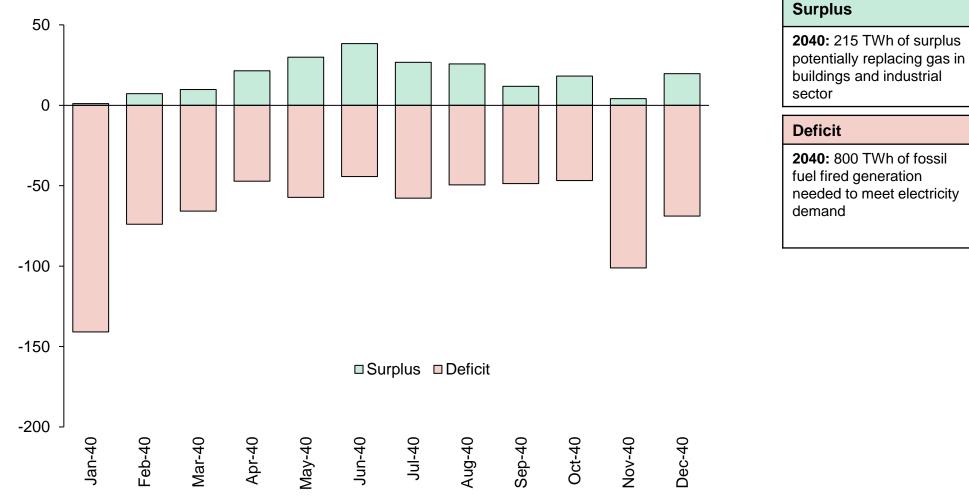


\*) EU27 + UK \*\*) Includes Nuclear power generation Source: Refinitiv, Rystad Energy Research and Analysis



### Net deficit of 580 TWh to be met by gas-fired generation or storage

### EU\* power generation balance, 2040 TWh



<sup>\*)</sup> EU27 + UK Source: Refinitiv, Rystad Energy Research and Analysis



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