

# ***NATURAL GAS: FUTURE POTENTIAL IN ENABLING RENEWABLES***

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## **Overview**

There is a large potential for gas to grow its role temporarily, mainly replacing coal in electricity generation (complementing renewable energy) and petrol/diesel in the transportation sector – enabling more biogas. In residential/heating there is more uncertainty, as many solutions are considered, both more electric and renewables, as well as efficiency measures. To grasp these opportunities, the gas industry will have to be pro-active. At today's mindset, the demand for gas will continue falling in all developed countries except in the US.

## **Methods**

Empirical evidence from many markets, comparing the role of gas and renewables and coal. Dialogue with key players in both industry and academic discussions shows evidence of very different mindsets. Analysis of future demand for energy, share of electricity and role of renewables and gas, as well as direct use of natural gas in heating and transportation. We build on previous analysis. For example, Sund Energy has worked with many scenarios for gas in different degrees of cooperation with renewables. We have also worked with many renewable solutions and have a good understanding of how they need natural gas (or not). Karen Sund was a peer reviewer of the IEA 450-scenario, and has a good understanding of global energy, including gas, renewables and oil/coal.

## **Results**

There is a great interest in many countries to reduce climate gases, and much renewable energy has already been developed, especially in the electricity sector. The gas industry has assumed that natural gas would be the best fuel and technology to balance the intermittency of renewables, assuming more flexibility than coal. In practice, countries with large renewable power capacity often use coal as flexible generation (and even nuclear at times), while natural gas is in general little used. For example, our analysis of Germany shows that gas is mainly used when electricity demand is very high and renewables are contributing less than normal. Then gas provides peak power beyond coal at full capacity. This could change in the future, and we already see UK gas more flexible generation as well as baseload, and is used more than coal lately, mainly due to higher CO<sub>2</sub>-costs than the rest of Europe. With more retirement of coal capacity, the role of gas could grow, and this will also open opportunities for energy storage with gas, using existing capacity. In addition to electricity, we see more renewables in the transport sector, and in some countries, biogas is providing “climate negative” emissions and improved air quality. Natural gas can be a good bridge to using more (upgraded) biogas as the same infrastructure can be used, and we already see this in Sweden, UK and Germany. Biogas could also be used in power and heat, as we already see in Denmark.

## **Conclusions**

What does it take? Natural gas players need to embrace renewables, not argue against them. Further, open and honest dialogue and constructive cooperation needs to take place. This could extend the life of natural gas, replace more coal and petrol/diesel and provide more overall reliability for energy. Small scale LNG could be used as a temporary measure in areas without natural gas pipelines, which are increasingly seen as possible stranded assets.

Transparency and openness is needed on both prices and emissions. This will need to be improved in the gas industry to get trust and comparability with other solutions.

CCS has been discussed as a measure needed for future fossil fuels, but with more efficiency the role of CCS may be smaller. With today's technology, CCS is more suited for baseload generation than intermittent operation of plant. If renewables grow to large scale, CCS could be used to achieve negative emissions as long as today's accounting of emissions from renewables remains at zero.

We would recommend future research and innovation to focus less on theoretical economics and technical solutions, and more on understanding decision makers in the value chain with most attention to consumers.