

FACT SHEET

November 2013

The Benefits of Natural Gas

Natural gas – key to a cleaner future

- Natural gas satisfies a significant amount of Europe's daily energy needs. Natural gas makes up almost **a quarter of the EU's total energy consumption**, and its share is steadily increasing.
- Natural gas **demand** in the European Union **grew by 32.6 percent** between 1990 and 2011. It is the only fossil fuel experiencing long-term demand growth in the region. On a global scale, the share of natural gas in the energy mix grew from 17 percent in 1980 to 21.3 percent in 2011, and is expected to increase to 23.7 percent by 2035.¹
- Renewables will play an increasing role in the coming decades. According to the EU's climate protection goals, their share is to rise to 20 percent by 2020.
- Natural gas will, however, remain an important energy source, as it has specific **properties that make it suitable to provide energy security** and bridge the gap to a future energy mix based on renewable sources.
- Natural gas is the **most environmentally friendly fossil fuel**, and it is widely available and affordable: Global long-term recoverable gas reserves are estimated to be equal to more than 235² years worth of production at current rates.

Efficient combustion and low carbon emissions

- Natural gas has the **lowest CO₂-emissions** compared with all other fossil fuels. Because of a beneficial combination of hydrogen and carbon molecules, natural gas produces roughly **38 percent less CO₂ when burned**.
- Taking production and transport, chemical composition, and efficiency of the fuel into consideration, lignite emits 1,009 gram of CO₂ per kWh, natural gas only 621 gram.³
- Compared with other fossil-fueled power plants, **gas-fired power plants also have a higher energy efficiency**: around 60 percent, compared to 45 percent for a typical coal-fired power plant. As a result, using gas in electricity production results in at least **50 percent less CO₂ per kilowatt hour (kWh)** than using coal.
- Between 2000 and 2012, capacities for producing electricity with natural gas in the EU expanded considerably. With around 121 Gigawatt, it makes up over 40 percent of all newly created production capacity⁴.
- Replacing just 10 percent of the EU's total electricity generation using coal with gas-generated power would cut CO₂ emissions by 120 million tonnes per year. That is the equivalent of over two times of Sweden's annual CO₂ output.
- The United Kingdom increased the share of gas in electricity production from 1 to 46 percent between 1990 and 2010, largely replacing coal as an energy source. Over the same period, annual carbon dioxide emissions dropped from 590.3 to

¹IEA, World Energy Outlook 2013, pp. 103, 572

²IEA, World Energy Outlook 2013, p. 107

³Oeko-Institut Darmstadt: Global Emission Model for Integrated Systems (GEMIS), Database

⁴EWEA, Wind in power 2012 European statistics, 2013

495.8⁵ million tonnes – a reduction of almost 100 million tonnes per year.

Bridging the gap towards renewable energy

- Natural gas is the **perfect partner for renewable energies**. It can compensate for **fluctuations in renewable energy production** which are expected to become more significant as the share of renewables in the energy mix increases.
- **Gas-fired turbines** can be brought online in minutes rather than the hours it takes for coal-fired plants, or even days for nuclear reactors. Thus, they **can adapt rapidly to load fluctuations** that occur when energy from intermittent renewable resources is fed into the electricity grid.
- Greenpeace recommends an increase in gas-fired power plants to counter fluctuations in production of solar and wind power, adding that **“Natural gas as a bridge technology is one key to climate protection and a fast nuclear phase-out.”**⁶

Wide range of applications of natural gas

- Natural gas is used in many homes for the **heating** and for **cooking**. In the Netherlands, 98 percent of all homes are connected to the gas distribution network.
- Another area where natural gas brings benefits is **transport**. Natural gas vehicles (NGVs) use less fuel and are more environmentally friendly than gasoline cars. **NGVs emit 25 percent less CO₂ and 95 percent less carbon monoxide** compared to gasoline. **Worldwide, 17.8 million NGVs are used.**⁷
- Finally, industries such as the chemical sector use gas for a range of applications, including the production of fertilizers, plastics and anti-freeze agents.
- Natural gas **provides over 30 percent of all energy consumed by European industries.**

More information at www.nord-stream.com

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⁵ [Department of Energy and Climate Change, 2010 UK GREENHOUSE GAS EMISSIONS, FINAL FIGURES](#), 2012, p. 19.

⁶ Greenpeace, [Der Atomausstieg bis 2015 ist machbar](#), 4 April 2011

⁷ NGV Communications Group, [Worldwide NGV statistics](#), 2012