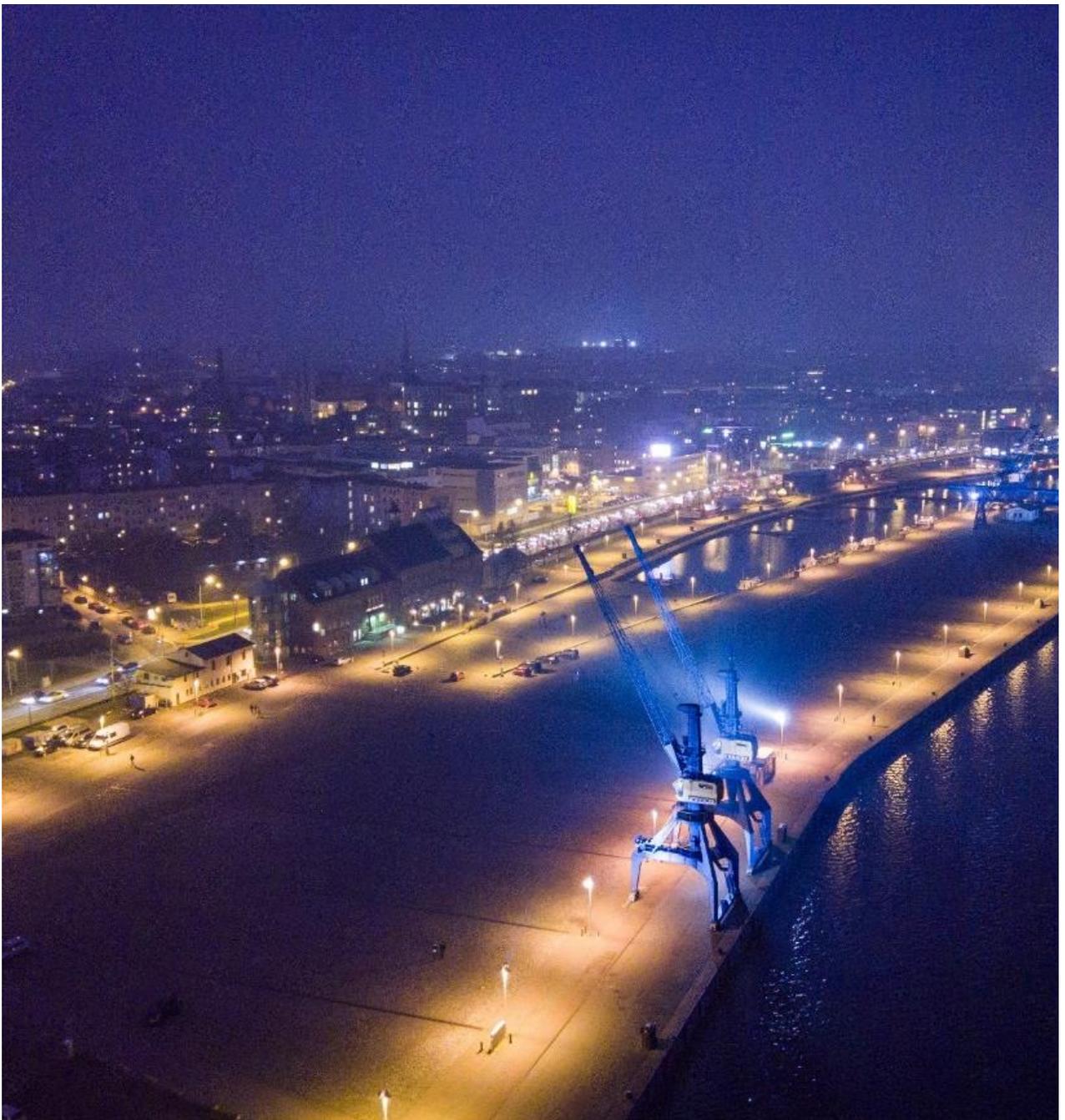


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# Nord Stream 2 and Climate Protection

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## Nord Stream 2 provides a cost-effective contribution to the EU's climate protection target

Natural gas offers versatile applications, from chemical feedstock, to heating, cooling, transportation on land and sea – to power generation. Gas-fired power plants are more flexible (start-up times) and less capital-intensive in their construction. In power generation, gas emits 50% less CO<sub>2</sub> compared to coal, even less when transport and mining are factored in, and gas is used in more efficient combined heat and power plants (CHP).

### 1. In the EU, gas is expanding its share in the power generation mix, projected to overtake coal in about 10 years.

IEA WEO 2015 NPS (p. 604)	1990	2013	2025	2035
Gas share in power gen.	8.5%	14.8%	19.3%	21%
Coal share in power gen.	44.4%	31.7%	21.6%	11.6%

Current CO<sub>2</sub> emissions in the EU stand at around 4611 million tonnes of CO<sub>2</sub> equivalents (for 2013<sup>1</sup>) – which is about 19.8% below 1990 levels, likely to reach the 2020 target of a 20% reduction over 1990. However, as for the 2030 targets of 40% reduction, the European Commission contends<sup>2</sup> that **Europe is not yet on track**. According to a PWC study, the EU will need to decarbonise at 3.1% per year (measured in tCO<sub>2</sub>/GDP) to reach its 40% reduction target by 2030. This is faster than the UK's 'dash for gas' in the 1990s or Germany's restructuring after reunification. Despite the EU's existing policies to tackle climate change, it will still need to "find another gear."<sup>3</sup>

### 2. Without more gas for fuel switching, the emissions reduction targets will not be met.

- > Coal use in the EU28 power sector accounted for 927 million tonnes of CO<sub>2</sub> in 2013, generating a total of 905 TWh of electricity. Producing the same amount of power with gas, the EU could save 500 million tonnes of CO<sub>2</sub>, already a long way towards the reduction goal.<sup>4</sup>
- > Switching just one percent of the overall EU's electricity generation from coal to gas cuts CO<sub>2</sub> emissions by about 5 million tonnes.<sup>5</sup>

1 Eurostat: Greenhouse Gas Emission Statistics (as of December 2015) [http://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse\\_gas\\_emission\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emission_statistics) (accessed 13.3.2016)

2 European Commission: State of the Energy Union, [http://ec.europa.eu/clima/news/articles/news\\_2015111801\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2015111801_en.htm) (accessed 14.3.2016)

3 PWC: EU Emissions targets and implications for business (2015) p.3

4 IEA World Energy Outlook 2015, p. 606. CO<sub>2</sub> Intensity per TWh based on New Policy Scenario)

5 IEA World Energy Outlook 2015, p. 606. CO<sub>2</sub> Intensity per TWh based on New Policy Scenario)



- > The UK for example, increased power consumption between 1990 and 2013 by 11%. Still, emissions from power generation decreased by 29% over the same period, which the UK department of Energy and Climate Change attributes to the fuel switch from coal to gas<sup>6</sup>.
- > However, in Germany gas is under pressure from cheap coal – despite an ever growing share of renewables, emissions have even gone up recently from increased coal burning, from 315 million tonnes of energy related CO<sub>2</sub> emissions in 2010 (when gas covered 14% of power generation, coal 43%<sup>7</sup>) to 327 million in 2013, reflecting that the share of gas in power generation dropped to 10.5% while coal grew to 45.5%<sup>8</sup>. Germany needs to reach a reduction down to 750 million tonnes of CO<sub>2</sub> emissions by 2020 (from currently 912 million) to stay on track with its own emission reduction targets (40% under 1990 by 2020). Currently, this goal is not in sight. Latest expert estimates see German plans to retire coal plants in reserve as saving only 8 million tonnes<sup>9</sup>.
- > Using 55 billion cubic metres of gas (bcm; nameplate capacity of Nord Stream 2) to replace coal in power generation would by itself save about 160 million tonnes, or 14% of the CO<sub>2</sub> from power generation overall<sup>10</sup>.

### 3. Energy experts confirm gas demand will remain at least stable

The **EU and renowned research institutions like the IEA predict that demand for gas will remain at least stable**. The IEA sees gas demand, even under new policies, as largely stable (+2 bcm over current levels, EU28 New Policies Scenario for 2035<sup>11</sup>) – if only current policies are accounted for, demand will grow by 98bcm (EU28 Current Policies Scenario for 2040<sup>12</sup>). Based on the EU's own Reference Scenario (2016), gas demand is projected to remain mostly stable over the coming 20 years, while domestic production, which has already decreased significantly in the last years, is projected to drop by another 50% in the next 20 years (Norway -25 bcm, UK -25bcm, Netherlands -40 bcm)<sup>13</sup>.

Fuel switching from coal to gas, even within the existing power generation capacities in the EU, can move gas demand by as much as 30 bcm in one year<sup>14</sup>.

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6 United Kingdom DECC: 2013 UK Greenhouse Gas Emissions, Provisional Figures and 2012 UK Greenhouse Gas Emissions, Final Figures by Fuel Type and End-User; [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/295968/20140327\\_2013\\_UK\\_Greenhouse\\_Gas\\_Emissions\\_Provisional\\_Figures.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295968/20140327_2013_UK_Greenhouse_Gas_Emissions_Provisional_Figures.pdf) (accessed 13.3.2016)

7 AGEB, 2011

8 BdEW, 2014

9 Euronews: Claudia Kemfert: '40% sind illusorisch, Deutschland wird das Klimaziel verfehlen' <http://de.euronews.com/2015/12/01/claudia-kemfert-40-prozent-sind-illusorisch-deutschland-wird-emissionsziel/> (accessed 10.3.2016)

10 IEA 2015, p. 606 based on 10.34 kWh per cubic metre of gas, with a 49% efficiency factor applied for power

11 IEA World Energy Outlook 2015, p. 604

12 ibid. p. 605

13 EU Reference Scenario 2016 - Energy, transport and GHG emissions - Trends to 2050, p. 4; adapted with various production outlooks

14 IHS Energy: The Four Floors of Global Gas Prices, March 2016



A functioning gas market requires sufficient gas deliveries in a cost-competitive and secure way, since domestic production is projected to rapidly decrease. If this demand for more gas is not met or gas supplies become less competitive, coal may once again increasingly replace gas (as it happened in Germany, see above).

#### 4. “Pipeline gas has the edge over LNG – both economically and ecologically”<sup>15</sup>

Nord Stream 2 will offer a secure, reliable connection to the world’s biggest gas reserves in Siberia, where investments from Russian and international energy companies over the last decades have ensured that the gas fields are **amongst the most cost-effective** sources from which to supply Europe. At the same time, Russian gas supplies are available and deliverable at short notice, making **Russian piped gas the best option for Europe’s gas supply** - economically and ecologically.

LNG, as often suggested, will certainly play a role in supplying the EU, yet its role in realizing a secure, affordable and sustainable gas supply are limited.

- > Higher emissions: Liquefaction and shipping of LNG causes about a third more emissions than piped gas<sup>16</sup>. By comparison, the Nord Stream 2 pipeline will need only one compressor station to propel the gas across the Baltic Sea.
- > Lack in capacity: 55bcm of gas would require around 600-700 LNG tanker shipments in the Baltic Sea<sup>17</sup>. Currently, in the whole world only 30 tankers are available for spot trading, meaning that the rest of vessels is tied up in long-term shipping contracts, mostly in Asia<sup>18</sup>.
- > LNG follows the markets: Due to the prevailing market dynamics, LNG Imports in the EU dropped from around 80 bcm in 2011 to about 44 bcm in 2013, as suppliers directed their shipments to Asia because of the higher market prices in that region. Despite sufficient upstream facilities and many LNG regasification sites in Europe, which on average are only used at 25%, LNG cannot competitively replace piped gas in the European markets.

**Nord Stream 2 also compares favourably to onshore pipelines**, which require significant land usage, longer construction times and burn more gas for interim compression.

Extensive Environmental and Social Monitoring Programmes have demonstrated that construction of the existing Nord Stream lines **did not cause any significant environmental impact in the Baltic Sea**, confirming the positive environmental

15 Mario Mehren, Chairman of the Board of Executive Directors at Wintershall, as quoted by Caspian Energy Newspaper, 5 May 2016

16 US Department of Energy, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States, 29 May 2014

17 Assuming tanker sizes able to operate in the Baltic, around 150,000 m<sup>3</sup> of LNG

18 Cambridge Energy Policy Research Group, The economics of global LNG trade: the case of Atlantic and Pacific inter-basin arbitrage in 2010-2014, p. 43



recovery trend after construction. So far, all monitoring results have confirmed that construction-related impacts were minor, locally limited and predominantly short-term.

**Nord Stream 2 will add a new and highly reliable supply route from Russia to the EU internal market, ensuring that gas remains affordable. By making more gas available to replace coal in power generation Nord Stream 2 will provide a cost-effective contribution to emissions reduction.**



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**About Nord Stream 2 AG**

Nord Stream 2 is a planned pipeline through the Baltic Sea, which will transport natural gas over 1,200km from the world's largest gas reserves in Russia via the most efficient route to consumers in Europe. Nord Stream 2 will largely follow the route and design of the successful Nord Stream pipeline. With Europe's domestic gas production projected to halve in the next 20 years, Nord Stream 2's twin pipeline system will help Europe to meet its future gas import needs, with the capacity to transport 55 billion cubic metres of gas per year, enough to supply 26 million European households. This secure supply of natural gas with its low CO<sub>2</sub> emissions will also contribute to Europe's objective to have a more climate-friendly energy mix with gas substituting for coal in power generation and providing back-up for intermittent renewable sources of energy such as wind and solar power.

**[www.nord-stream2.com](http://www.nord-stream2.com)**