

Project Background

Nord Stream 2 AG | Apr-19





Nord Stream 2: New Pipeline for Europe's Energy Future

Access to natural gas is becoming increasingly critical for both the EU and the global energy market. With global demand rising and its own gas resources depleting, the EU will have to secure additional gas resources in the long term in order to ensure global industrial competitiveness and meet domestic demand. Nord Stream 2, a new pipeline through the Baltic Sea, will enhance the EU's security of supply of natural gas, strengthen the competitiveness of the gas market and support EU climate goals.

1. Nord Stream 2 Provides Needed Additional Capacity for Long-term Supply

- > A route to supply additional gas imports to the EU through the Baltic Sea to compensate for decreasing domestic gas production and fill a part of the growing demand for imported gas.
- > Nord Stream 2 will be a competitive additional option with direct access to some of the world's largest natural gas reserves, making the EU's gas supply more robust and contributing to its security of energy supply

Based on the EU Reference Scenario 2016, Europe's gas demand is projected to remain mostly stable over the coming 20 years. At the same time, production will decline by about half, with a projected output decrease of about 25 bcm in Norway, ~25 bcm in the UK and ~40 bcm in the Netherlands. Furthermore, gas exports from Northern Africa will be increasingly constrained by own consumption while new gas from the Caspian region will deliver only small amounts to the EU. This leaves approximately **120 bcm of European gas supply to be compensated** – by either LNG or Russian gas. The share between them will be set by the market.

These additional gas imports will require new infrastructure to be built, which will also enable the European gas market to better compensate supply- and demand-side uncertainties that may materialise at any time. **Nord Stream 2 will be part of the solution to close the import gap and increase security of supply** in case any other import capacity or gas supply becomes unavailable or is faced by exacerbated cost and risk.

On the supply side, the Dutch regulator has capped production from the Groningen field significantly and halted production in parts. Supply from this field could be further curtailed in the future. The LNG market on the other hand is typically subject to cycle shifts: while there is a global market, it is clearly focused on Asia, where very little pipeline capacity exists. Once Asian demand picks up, it will outpace the build-up of new liquefaction trains and absorb any LNG in the market. Against the backdrop of rising



global demand for gas (+25 percent in the coming two decades), this shift in the LNG market is projected to already happen in the early 2020s.

Nord Stream 2 will offer capacities to compensate the lower LNG availability that can result from these market shifts and increase competitive pressure on natural gas supplied to the EU from different countries, resulting in lower gas market prices for consumers. A market study, published by an energy research institute of the University of Cologne, found that European consumers could save 8 billion euros every year if the pipeline is operational in 2020.

Nord Stream 2 will complement the existing gas transportation routes. With an import gap growing to around 120 bcm in the next two decades, there is ample space for other transport systems for Russian gas to compete, provided the operators ensure that the pipelines are adequately repaired and modernised for future use. **Nord Stream 2 helps mitigate transit-related risks in Europe** by providing modern, highly efficient capacities connecting to vast gas reserves readily available in Northern Russia.

2. Additional Capacity Ensures Affordable and Sustainable Energy Supply to Boost Industrial Competitiveness and Achieve the Energy Transition

- > **Nord Stream 2, as an efficient, reliable, modern offshore gas transportation system, will offer an additional competitive transport option for bringing the gas to major demand centres within the EU gas market.**
- > **The added liquidity at the hubs will facilitate and further improve an integrated EU internal market, in which gas can flow to where it is needed most, signaled by gas prices at different hubs.**
- > **This offshore gas pipeline, based on proven and safe technology compatible with the environment, needs less energy to get the gas to market.**
- > **In a competitive market, gas will deliver its potential: the versatile, affordable, low-carbon answer to the climate challenge, reducing carbon emissions at low cost.**

The new Nord Stream 2 Pipeline will deliver gas from the vast natural gas field Bovanenkovo in North Russia's Yamal Peninsula, which holds in total some 4.9 trillion cubic meters of gas reserves, more than twice as much as the total proven reserves of the EU (1.9 trillion). Nord Stream 2 is the **direct connection between the world's largest gas reserves** in Russia (47 trillion cubic metres) and the EU gas transmission system.

With over 40 years of exports to Western Europe, Russia is the world's biggest gas exporter. Gas production and modern transport facilities in Russia have seen major long-term investments from Russian and international energy companies for decades, developing new fields and increasing output. As a result of these investments, **Russian reserves are amongst the most cost-effective** sources from which to supply Europe.



At the same time, vast Russian gas supplies are available and deliverable at short notice, with over 100 bcm of spare capacity per year. This makes **Russian piped gas the best option for Europe's gas supply** – economically and ecologically.

Once the gas reaches the EU gas network at Germany's Baltic coast, it can be transported onwards to supply the hubs in Europe. **The high degree of diversification, competition and the progress in interconnection means that gas markets all over Europe benefit from these additional gas volumes.**

With global demand rising over 25 percent (growing by over 1,000 bcm until 2035) in the coming two decades and its own gas resources depleting, the EU will have to secure gas resources in the long term in order to ensure global industrial competitiveness. Together with other suppliers and transport options (such as LNG), gas from Nord Stream 2 will ensure a competitive supply. EU industry in particular needs reasonably priced energy if it is not to relocate production to other regions.

More liquidity at the hubs where gas is traded and additional capacities built to connect import infrastructure with ever more markets in Europe allow for more optionality and flexibility, and thereby, a competitive market. **EU households and industries will benefit from the new infrastructure in an already diversified EU gas market** with gas prices across the EU up to 13 percent lower if the pipeline is operational in 2020.

The privately funded investment for Nord Stream 2 provides a **major economic stimulus** for many sectors of the European economy: more than 1000 companies from 27 countries supply steel, engineering, construction, pipe-laying, logistics, environmental surveys, monitoring and other services. Investments have already been committed for all of the project's CAPEX, amounting to about 8 billion euros. A labour market and economic impact study published in April 2019 by management consultancy Arthur D. Little has shown that the **total economic benefit, of the Nord Stream 2 current commitments, will be over 9.9 billion euros**, creating 57,500 full-time-equivalent jobs and adding 4.7 billion euros in GDP in a five years period. These positive effects are mainly seen in countries with project activities around the Baltic Sea like Russia, Germany, Finland and Sweden and countries with offshore gas industry contractors like the Netherlands, United Kingdom, Norway and Italy.

A modern offshore pipeline compares favourably to onshore transportation in terms of carbon footprint. More compression power and higher pressure allow for more efficient fuel gas use and lower emissions, where onshore pipelines require several compressor stations along the way. The delivery of natural gas from Bovanenkovo via the new pipelines in Russia and Nord Stream 2 to Germany can save 8.9 million tonnes of CO₂ per year compared to transport through the older and significantly longer central Russian corridor systems and Ukraine. Offshore pipeline gas also causes significantly lower emissions than the energy-intensive liquefaction, transport and re-gasification of LNG. Compared to Nord Stream 2, shipping the equivalent of 55 bcm of gas to the EU via LNG emits between 17.1 and 44.6 million tonnes of additional CO₂ equivalents, depending on how far the tanker has to travel.



Natural gas offers a cost-effective and sustainable way to achieve emissions reduction targets. Depending on the technology used, gas-fired power plants produce about 50 percent less CO₂ than coal-fired power plants. The 55 bcm of gas that Nord Stream 2 will have the capacity to transport could save about 160 million tonnes – the equivalent of 14 percent of total EU CO₂ emissions from power generation or the emissions of about 30 million average cars per year – if the gas were to be used instead of coal. Gas-fired generation will thus play an important role as a partner to renewable energy. Still, natural gas is versatile as it can be used not only in power generation and heating applications but also as a chemical feedstock and a transport fuel.

In regions with an attractive, well-supplied gas market, consumers can benefit not only from a reliable and competitive gas supply but also from the environmental potential of greater use of gas. The United Kingdom was able to lower its CO₂ emissions to levels not seen in decades, thanks to a bigger role of gas in its power generation. A study showed that in the case of Germany, where gas already has a significant share in the energy mix and half of the country's homes use the fuel for heating, **natural gas is the cheapest means of carbon reduction** in power generation, residential heat and in mobility. Nord Stream 2 as part of an economically sound reinforcement of Europe's gas market will enable this climate-friendly energy transition under sensible economic conditions.

The developers of Nord Stream 2 are **committed to safety and environment-friendly solutions** from the very start of the project. Offshore gas pipelines are the **ecologically most sensible way to transport natural gas**, constructed in a fraction of the time it takes for onshore lines to be laid, with a smaller impact on the ecosystem.

The results from the first Nord Stream project's Environmental and Social Monitoring Programmes demonstrate that the Nord Stream Pipeline's construction did not cause any unforeseen environmental impact in the Baltic Sea and confirms the positive trend in environmental recovery after construction. All monitoring results have confirmed that construction-related impacts were minor, locally limited and predominantly short-term.

3. Conclusion: Nord Stream 2 Helps Make European Gas Supply More Secure, Affordable and Sustainable

Nord Stream 2 can contribute to all three main objectives of European energy policy:

- > **Nord Stream 2 will increase security of supply** by offering an additional transport system for the new volumes needed to compensate the decline in EU production and to better enable the market to mitigate supply risks.
- > **Nord Stream 2 will contribute to ensuring that gas stays affordable**, to the benefit of the industry and of consumers alike.
- > **Nord Stream 2, the route with the least environmental impact**, will provide access to the quickest and most cost-effective way to reduce emissions – additional natural gas to replace coal.



Nord Stream 2, with its state-of-the-art technology, will offer reliable, economic and environmentally sound natural gas supplies over the coming decades, building on the proven experience of the existing Nord Stream Pipeline system and the mutually beneficial long-term energy relationship between the EU and Russia.

Basic Project Profile

- > Developed by Nord Stream 2 AG, based in Zug, Switzerland.
- > Shareholder: PJSC Gazprom.
- > Financial Investors: ENGIE S.A., OMV AG, Royal Dutch Shell plc, Uniper SE and Wintershall Holding GmbH. Each company will fund up to 950 million euros.
- > CAPEX: around 8 billion euros, fully privately funded investment.
- > All major material and service contracts have been awarded: supply of pipes, logistics and pipelay services.
- > Legal status: permits required from five countries whose waters the proposed route would cross – Russia, Finland, Sweden, Denmark, and Germany.
- > Permits have been granted in Germany, Finland, Russia and Sweden, the permitting process in Denmark is ongoing.
- > Technical design: two parallel 48-inch lines, approximately 1,230 km (depending on final route), each 27.5 bcm annual capacity, starting on the Baltic Sea shore west of St Petersburg, landing near current Nord Stream Pipeline on the German Baltic Sea coast near Greifswald.
- > Each line will require approximately 100,000 24-tonne concrete weight coated steel pipes laid on the seabed.
- > As of April 2019, pipe delivery has been completed and over 90% of pipes have already been coated. As of the end of March 2019, more than 900 km of pipes have already been laid.
- > Pipe laying carried out by specialised vessels handling the entire welding and pipe laying process. Logistical support from Baltic coast ports for concrete weight coating and interim pipe storage.



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About Nord Stream 2

Nord Stream 2 is a planned pipeline through the Baltic Sea, which will transport natural gas over some 1,230 km 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 technical concept of the successful Nord Stream Pipeline. The new pipeline will have 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 CO₂ 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.

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