

# PLATTS GUIDE TO NORD STREAM 1 AND 2 GAS PIPELINE PROJECTS

**NATURAL GAS SPECIAL REPORT**

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## NORD STREAM 2 FACES NEW ENERGY WORLD ORDER

- **Shareholders buckle under opposition**
- **Lower prices, demand compared with Nord Stream 1**
- **EU's relations with Russia have worsened**

Gazprom's plan to build the Nord Stream 2 gas pipeline was intended to be a mirror image of the first Nord Stream pipeline.

While the technical specifications remain the same, the decision on August 12 by the five European partners in the Nord Stream 2 project to withdraw from the consortium has significantly changed its profile.

The move was triggered after Poland's anti-competition authority objected to the creation of the JV, saying it could have a business impact on the companies' operations in Poland.

All five partners — Germany's Wintershall and Uniper, France's Engie, Austria's OMV and Shell — are now looking at other ways they can contribute to the project.

Nord Stream 2 is a twin in every technical aspect to the Nord Stream 1 pipeline that came online in 2011, and is proving just as controversial, but the similarities stop there, analysis by Platts shows.

The 55 Bcm/year Nord Stream 2 gas pipeline would double capacity from Russia to Germany across the Baltic Sea, but faces poorer market and regulatory conditions than its Nord Stream 1 twin.

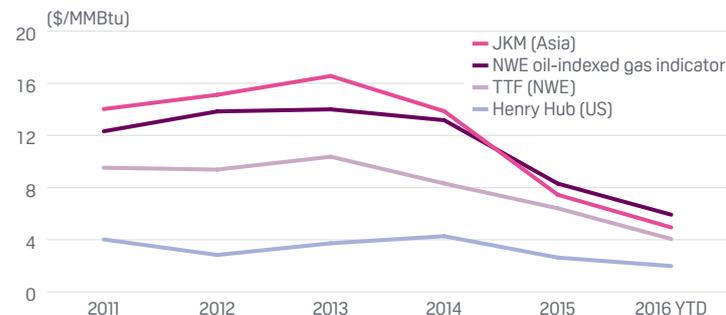
The Polish opposition that ultimately led to the end of the JV as it was intended is evidence of that.

Low oil and gas prices, LNG oversupply, and long-term climate policies intended to shift the EU's energy system from fossil fuels to low carbon alternatives such as renewables, are new determining factors.

Political relations between Russia and both the EU and Ukraine, the main rival export route to the Nord Stream pipelines, are also far worse.

In the market, gas prices are down across the globe.

### AVERAGE GLOBAL GAS MONTH-AHEAD PRICES SINCE 2011\*



\*Nord Stream 1 came online in 2011

Notes: Yearly average of month-ahead prices

Source: Platts

## THE TECHNICAL SPECIFICATIONS

Details	Nord Stream 1 & 2
Size	55 Bcm/year
Number of lines	2 x 27.5 Bcm
Length	c1,200 km
Cost	Eur8 billion
Route	Russia to Germany via Baltic Sea
German landing point	Near Greifswald
Project company status	Registered in Switzerland under Swiss law
Project financing split	30% shareholders, 70% loans*

Source: Nord Stream, Platts

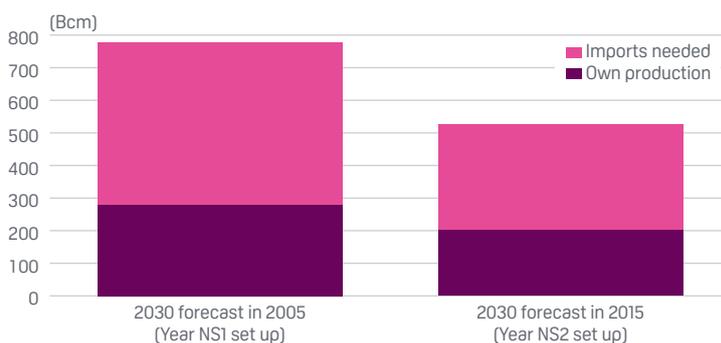
## THE TIMINGS AND SHAREHOLDERS

Details	Nord Stream 1	Nord Stream 2
Shareholder agreement signed	December 2005	September 2015
Work on laying first line starts	2010	2018 (tbc)
First line operational	2011	end-2019 (tbc)
Final shareholders	Gazprom (51%), BASF/Wintershall, E.ON (each 15.5%), Gasunie (joined 2008), GDF Suez (now Engie - joined 2010) - each 9%	Gazprom (50%), BASF, Uniper, Shell, Engie, OMV (each 10%)*
Final shareholders' home countries	Russia, Germany, The Netherlands, France	Russia, Germany, The Netherlands/UK, France, Austria*

\*Prior to August 12 announcement

Source: Nord Stream, Platts

## EUROPEAN 2030 GAS DEMAND FORECASTS, 2005 VS 2015



Source: IEA World Energy Outlook 2005 and 2015

For example, month-ahead gas prices at continental Europe's most liquid hub, the TTF, averaged \$6.40/MMBtu in 2015, as assessed by Platts.

This is down a third from an average \$9.50/MMBtu in 2011, when Nord Stream 1 came online.

Average Asian and US Henry Hub month ahead prices have also fallen by similar amounts in the last five years.

Russia's gas production costs are, however, very low, and Gazprom has shown willingness to reduce long-term contract prices for key customers, such as it did this year for France's Engie and Germany's Uniper.

Engie and E.ON are shareholders in Nord Stream 1 and had been part of the provisional Nord Stream 2 consortium.

### Demand forecasts down

European gas demand forecasts are also lower. The International Energy Agency's 2030 gas demand forecast for

OECD Europe was 526 Bcm in 2015, down about a third from the 788 Bcm it forecast for 2030 in 2005.

2005 was the year Russia's Gazprom and Germany's BASF/Wintershall and E.ON first agreed to build the 55 Bcm/year Nord Stream 1 pipeline.

In 2005 the IEA estimated OECD Europe would need 498 Bcm of imports by 2030. In 2015 it lowered this estimate to 325 Bcm, again down by about a third.

Gazprom, however, says its focus is on the extra imports needed to replace falling gas output from the EU and Norway, on top of existing imports such as through Nord Stream 1.

This could be as much as 144 Bcm by 2035, based on a 2015 forecast by consultancy IHS cited by Nord Stream 2 on its website.

IHS Energy forecast EU demand rising to around 500 Bcm by 2035, from an average of 462 Bcm/year from 2010 to 2014, while average EU and Norwegian production falls by around 106 Bcm.

This is not far off the IEA's 2015 forecast for OECD Europe, which covers 21 EU countries, plus Iceland, Norway, Switzerland and Turkey.

Both are higher, however, than the European Commission's latest 2030 EU gas demand estimate of 380 Bcm to 450 Bcm.

The EC's estimate is based on the EU achieving its 2030 targets to increase renewables' share of final EU energy demand to at least 27%, and to improve energy savings by at least 27% against business as usual.

These targets are linked to the EU's goal to cut its greenhouse gas emissions by at least 40% on 1990 levels by 2030, and at least 80% by 2050.

This means that without viable carbon capture and storage technology, and if the EU follows through on its goals, there will be increasing political pressure to reduce fossil fuel use – even lower carbon ones such as gas.

If EU demand fell to 380 Bcm by 2030, as in the lower end of the EC forecast, and stayed there, the need for extra imports in the IHS Energy scenario would be just 24 Bcm in 2035, all other things being equal.

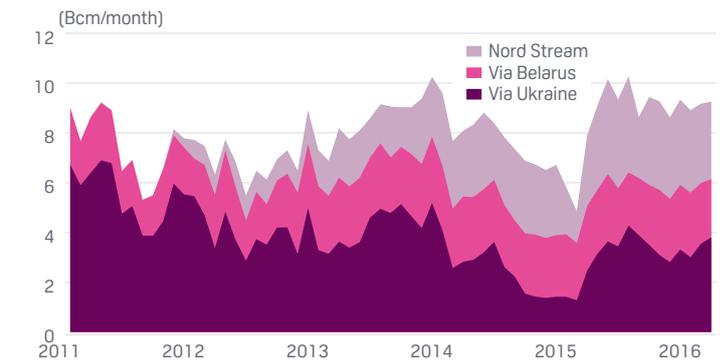
Nord Stream 2 is planned online by end-2019, so there is a potentially limited window to earn money just from replacing falling production.

### Re-routing Russian exports

One of the key impacts of Nord Stream 1 has been to reduce Russian export flows through Ukraine to the EU from up to 80% in 2009 to around 50% or less in 2015.

Russia only flowed 64 Bcm through Ukraine in 2015, less than half the 140 Bcm/year technical capacity (*see map on page 4*).

## NORD STREAM VOLUMES REPLACE UKRAINE TRANSIT GAS TO WESTERN EUROPE



Source: Platts Analytics' Eclipse Energy

## THE REGULATORY CONDITIONS

	Nord Stream 1	Nord Stream 2
European Commission view	EC designated NS1 as project of European interest for improving supply security by diversifying routes	EC says NS2 will not receive any special EU political or financial support as does not diversify routes or sources
EU's third energy package rules	Applied to NS1's onshore connecting pipelines only	Opponents want them applied to NS2 offshore pipeline. NS2 argues they're not applied to other offshore import pipelines to EU
Exemptions from third energy package rules	Gazprom allowed to reserve 50% of 36 Bcm/year Opal onshore pipeline to Czech Republic for sole use until 2031	No new onshore pipelines announced yet. German gas TSOs (which operate under third package rules) planning grid upgrades to accommodate NS2 flows
Gas supply security concerns	German regulator cited disruptions via Ukraine in granting Opal exemption. EU upgraded its supply security rules in 2010	EC proposed further upgrades to EU supply security rules in 2016
Russian view	Russia wants full access to Opal; is suing under German law to annul 2009 exemption and apply for new one	Russia complained to WTO in 2014 that EU's third energy package discriminates against Russian infrastructure
EU climate policy	No long-term climate policy in 2005	In 2009 EU set 2050 goal to cut CO2 by at least 80% on 1990 levels

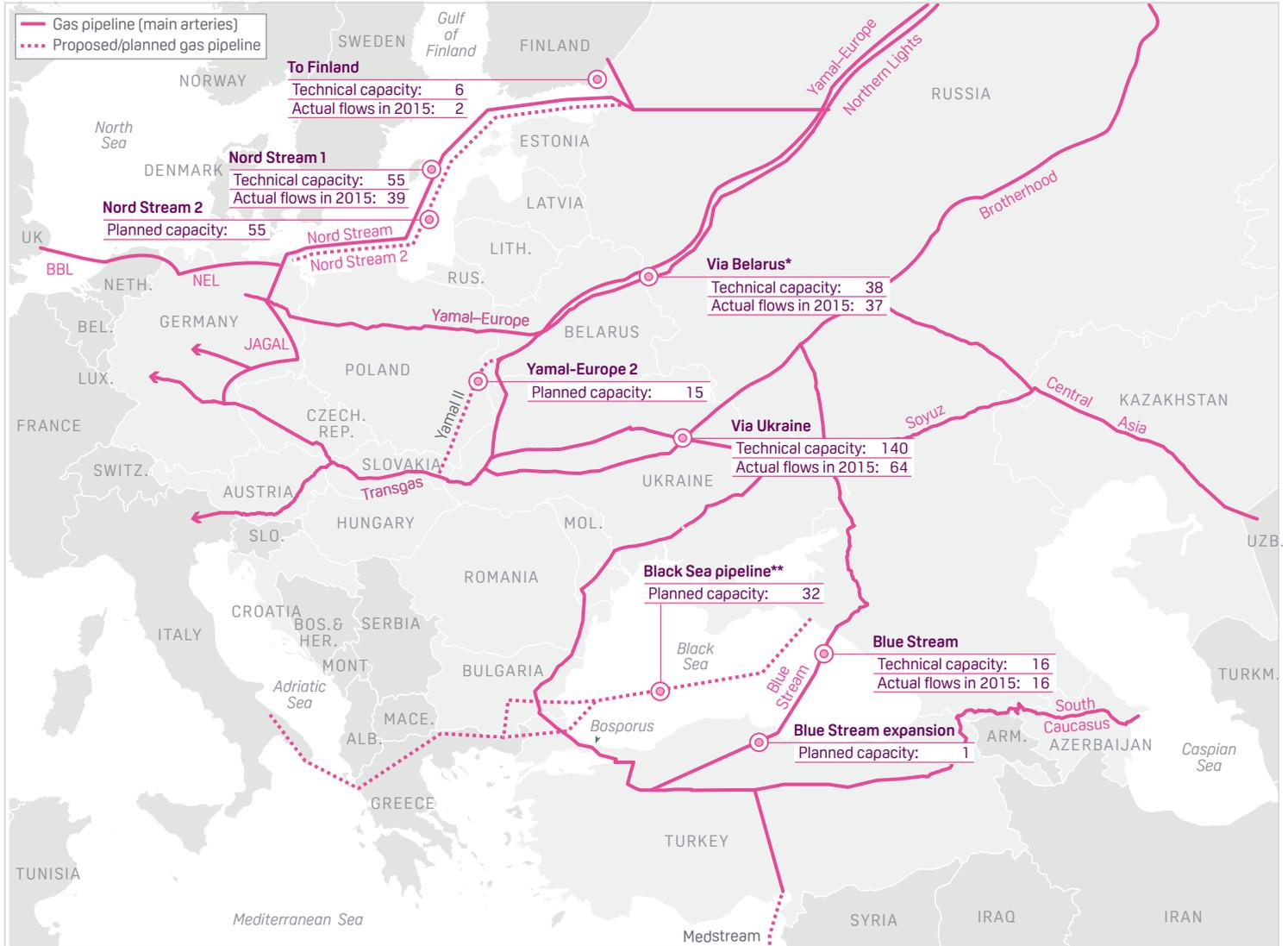
Source: Platts

## RUSSIAN-UKRAINIAN-EU RELATIONS

Details	Nord Stream 1	Nord Stream 2
Russian gas to EU via Ukraine disrupted	Yes, in 2006 and 2009	No, not since 2009. EU helped Ukraine negotiate with Russia on supply terms
Contract dispute	Yes, over prices, unpaid debts, transit	Yes, but this time 2009 contracts disputed at Stockholm arbitration court
New contracts needed	Yes, new supply and transit contracts signed in 2009 after supply, transit disruption. No EU involvement	Yes, both expire end-2019 (when NS2 planned online). Ukraine wants EU involved in talks for post-2019 transit contract
Impact on Russian gas to EU via Ukraine	Cut exports to EU via Ukraine from up to 80% in 2009 to around 50% or less in 2015	Could fall to zero, but Russia says will keep small volumes to supply southeast Europe
Ukraine battling Russian separatists	No	Yes, since 2014
EU sanctions on Russia for role in Ukrainian crisis	No	Yes, since 2014

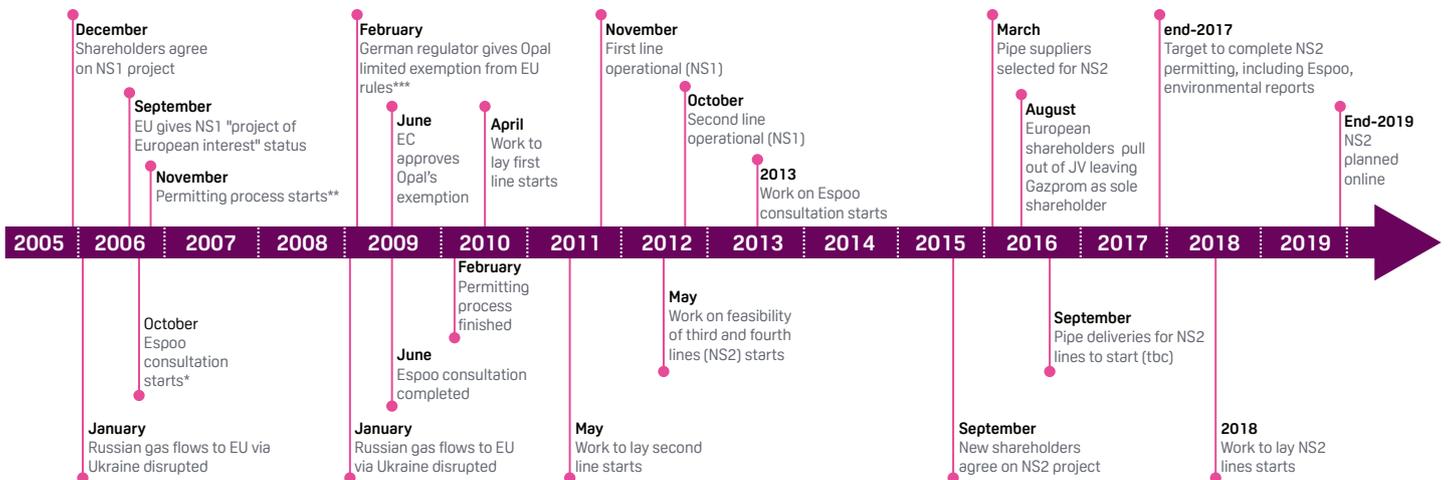
Source: Platts

### NORD STREAM 1 AND UKRAINE TRANSIT UNDERUSED IN 2015



Notes: \* Includes Yamal-Europe and other pipelines  
 \*\* Volumes of new line not yet publicly announced, but speculation of two lines of 16 Bcm/year - one to Turkey and one to Bulgaria  
 Source: Platts

### NORD STREAM 1 & 2 MAJOR MILESTONES



\*With all nine Baltic countries: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden  
 \*\*With five host countries: Denmark, Finland, Germany, Russia, Sweden  
 \*\*\* Opal carries NS1 gas across Germany to Czech Republic  
 Source: Nord Stream, Platts

All its other export pipelines flowed at nearly full capacity, except Nord Stream 1, which flowed 39 Bcm or around 70% of its 55 Bcm/year technical capacity.

Nord Stream 1 gained strong political and regulatory support from the EC and German federal energy regulator BNA for helping to diversify the EU's import routes.

This strong support came after unexpected disruptions to Russian gas supplies to the EU via Ukraine, in 2006 and 2009.

The EC has said that Nord Stream 2, however, which is set to lie alongside Nord Stream 1, does not help diversify the EU's gas import routes and so should not receive any special political or financial support.

There have also been no disruptions of Russian gas to the EU via Ukraine since early 2009, and the EU has been actively involved in helping Ukraine negotiate with Russia on supply issues to ensure stable transit. The EU also upgraded its gas supply security rules in 2010, and proposed further upgrades in February.

#### Transit contracts

Nord Stream 2 is still planned online at the end of 2019, which is also when Russia's gas transit contract with Ukraine expires.

The current transit contract was signed in 2009, when the Nord Stream 1 project was already quite advanced – pipe-laying work started the next year.

Permitting for Nord Stream 1 took just over three years, but the Nord Stream 2 consortium are clearly hoping that doing it all a second time will be quicker.

It is aiming to complete all permitting, including an Espoo international consultation on environmental issues, by the end of 2017, and start laying the pipe in 2018 (*see timeline on page 4*).

The build timetable is similar to the Nord Stream 1, with first gas expected within two years of starting to lay the pipe.

Ukraine's gas company Naftogaz wants to start talks with Gazprom on a post-2019 transit contract, preferably with the EU involved this time, its CEO Andriy Kobolyev said in April.

Gazprom, however, is not interested, he said. Both sides are waiting for a ruling on the disputed 2009 contract from Stockholm's arbitration court, expected by the end of this year, or start of 2017.

Kobolyev said he doubted that Gazprom would be able to bring Nord Stream 2 online by end-2019, and so it would have to negotiate a new transit contract with Ukraine.

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