

Challenges of the Nord Stream Project

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“Construction of pipelines in extreme conditions”

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Energy infrastructure for Europe

Nord Stream

- Two parallel offshore pipelines of 1,224 km through the Baltic Sea (transport capacity 55 bcm per year)
- A direct and fixed link between Russia's vast proven gas reserves and the European Union
- An additional route complementing existing network and other planned pipelines

Gas transported by Nord Stream can

- Provide 26 million European households with electricity and heating fuel
- Make a substantial contribution to EU climate protection goals
- Supply consumers since November 2011



The challenges

Technical

Commercial

Permitting

Communications

Environment

Financing

Time

Technical challenges

- Biggest international offshore pipeline project so far
- Enormous amounts of steel needed
- Very limited number of companies and potential partners specialised on pipe laying
- Challenging pipe laying process due to size and weight of the pipes
- 1, 224 km of pipe laying WITHOUT platform
- Complicated hyperbaric tie-ins to complete construction
- Smart systems and solutions needed to develop a successful logistics system



Commercial challenges

Technical challenges lead to commercial challenges:

- Enormous amounts of steel to be purchased
- Companies and partners specialised on pipe laying to be found and contracted

Furthermore:

- Project launch in 2006 (before Financial Crisis) and strong competition with other planned projects
- Time-driven project asked for early commitments to partners and early blocking of production capacities
- Commitments and start of production without guarantee of national permits for the pipeline

On top, a challenging financial situation:

- 7.4 billion euro project budget to be secured
- This budget to be entirely privately financed

Challenges permitting, environment & communications

Time-driven permitting process

- 5 countries to grant necessary national permits for construction
- 9 Baltic Sea states involved in biggest international consultations so far
- Positive results mandatory for realising the project

Environmental challenges

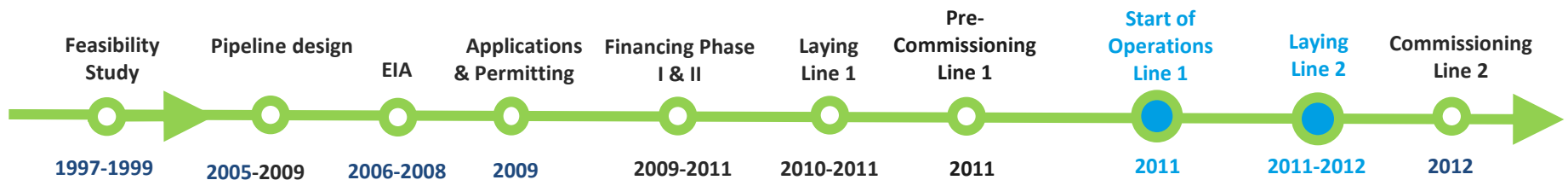
- 1,224 km route to be determined
- Evidence on low environmental impact for construction and 50 years of operation to be developed

Open & transparent communications needed

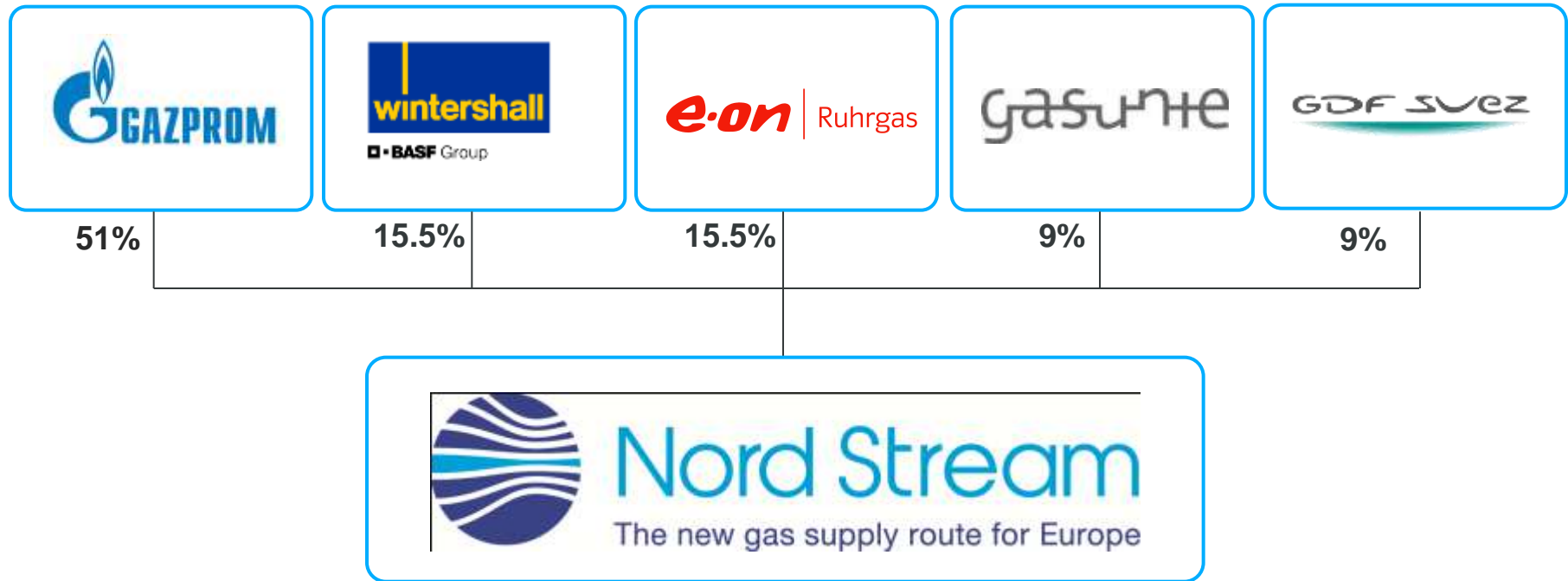
- 13 countries to be recognized in communications
- Appropriate approach for various target audiences



The Nord Stream project – a string of challenges, mastered on time within budget



Key point for managing the challenges – a strong consortium



- An independent company with strong shareholders offered the best structure for finding the best solutions and experts for succeeding!




Management of the technical challenges

Outstanding technical design:

- Outstanding technical design allowed the construction of twin subsea pipelines more than 1,200 km long. Size of 48 inch diameter, strong enough for 220 bar inlet pressure
- The technical design allows operation of the pipeline without intermediate compressor stations

Efficient and environmentally-sound logistics

- 202,000 pipes put in place
- Clever, optimized transport routes saved 60 million euros and reduced 200,000 tons of CO₂

	KP 0	KP 297	KP 675	KP 1,224
				
design pressure:	220 bar	200 bar	177.5 bar	100 bar
thickness:	34.6 mm	30.9 mm	26.8 mm	



Management of the technical challenges (cont.)

Safety track record during construction:

- Highest international safety standards have been considered during construction of the pipeline
- 21 million project hours have been performed, but just 46 lost time incidents and zero fatalities occurred

Safe and reliable operations:

- 24/7 monitoring system will guarantee safe and reliable gas transportation for the upcoming 50 years



Management of the commercial challenges

Committed business partners:

- No-turn-key contracting strategy, but worldwide tendering for main procurement packages
- Early commitments and start of production was a high risk, but key factor for successful completion of the project!
- Excellent cooperation between specialised Nord Stream teams and the industry's leading contractors

Solid financial structure:

- Nord Stream secured a 7.4 billion CAPEX budget: To be financed 2/3 by banks, 1/3 by the shareholders
- External Financing structured in two Phases, both Phases successfully completed
- A 60% oversubscription for both Phases, in total 26 banks are participating in Nord Stream



Management of the challenges permitting / environment

Meticulous compliance & permitting:

- 5 countries granted necessary national permits for the construction, in sum 9 Baltic states were involved
- A challenging compliance & permitting process, lasting 4 years

Focus on environment:

- In-dept survey of 40,000 km of the Baltic Sea
- 140 million euros invest into environmental studies, planning, route design and monitoring
- 1,000 sample locations along the pipeline route proved no unexpected environmental effects

Open dialogue & transparency:

- 450 meetings, 16 international consultations and 25 public hearings were organised
- Sufficient support for gaining national permits for construction of the pipeline



A project by the book: Nord Stream realised on time within budget!

- Nord Stream transports natural gas from Russia to the European Union since November 2011
- Line 1 finished on time and within budget
- Line 1 already delivering Russian natural gas to the European Union
- Line 2 on track within timetable and budget
- Project completion in 2012
- Further major import pipelines needed to secure European gas import requirements in the future



Thank you for your kind attention!

