



## Long-term commitment in Russia

### Securing supplies by engaging directly at the source

Russia is among the world's most richly endowed countries when it comes to natural resources: about one fifth of all known natural gas reserves are situated in Russia. The country therefore has the second largest gas reserves worldwide. Russia also lies in sixth place in the world oil rankings with more than 109 billion barrels of proven oil reserves. Russia is the biggest supplier of natural gas to the European Union, and Germany covers around a third of its fossil fuel demand with imports from Russia. For Wintershall, Germany's largest internationally active natural gas and crude oil producer, Russia is therefore an important core region.

Wintershall is currently involved in several joint projects concerned with the exploration and production of hydrocarbons in Western Siberia and southern Russia. Together with our Russian partners, we are focusing on stable and long-term collaboration. Thanks to our ongoing exchange of experience and know-how, a model of collaboration has emerged that has been supplying Europe with energy for over 25 years.

### Successful collaboration in exploration & production

**Achimgaz**, a joint venture between Gazprom subsidiary OOO Gazprom Dobycha Urengoy (50%) and the wholly owned BASF subsidiary Wintershall (50%), celebrates its 15th anniversary in 2018. The joint venture produces natural gas and condensate from the complex

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which situated in Western Siberia about 3,500 kilometers northeast of Moscow.

Following the launch of six pilot wells in 2008, commercial development and production began in 2011. Until the end of December 2017, Achimgaz had brought 88 wells into operation and also operates a large-scale facility for separating natural gas and condensate, which now has five processing lines. Around seventeen million cubic meters of natural gas are currently produced per day. In the coming years, 110 wells in total are planned to increase production to an annual level of over eight billion cubic meters of natural gas. By the start of 2018, the Russian-German joint venture reached production amounting to a total of more than 28 billion cubic meters of natural gas. Total condensate production was around 12 million tons. In 2017 alone, Achimgaz succeeded in raising natural gas production to more than 6.6 billion cubic meters of natural gas. In the next 30 years, Achimgaz plans to produce up to 230 billion cubic meters of natural gas and 70 million tons of condensate.

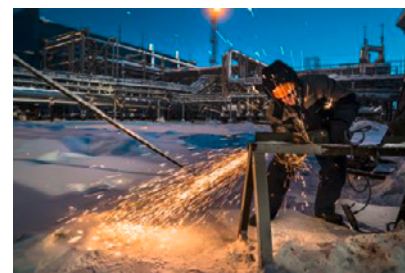
In addition, the asset swap with Gazprom completed in October 2015 has given Wintershall a 25.01% share in Blocks 4A and 5A of the Achimov Formation. Based on the development plans, the two blocks contain hydrocarbon reservoirs of 274 billion cubic meters of natural gas and 74 million tons of condensate. Wintershall and Gazprom will develop the reservoirs in Western Siberia together. The first production operations are planned for 2020.

The **Yuzhno Russkoye** natural gas field is another major natural gas production project shared by Gazprom and Wintershall in Siberia. The natural gas reservoir was commissioned in 2007, making Wintershall the first German company to directly produce natural gas in Western Siberia. Wintershall has a 35% share in the commercial success of the field through OAO Severneftegazprom. The field already reached a plateau production of 25 billion cubic meters of natural gas per year in the middle of 2009. 145 production wells are already in operation there. Around 70 million cubic meters of natural gas are produced there every day. The cumulative natural gas production reached 240 billion cubic meters by the end of 2017. The field, which was discovered in 1969, has recoverable reserves of about 600 billion cubic meters of natural gas.

The comprehensive production of natural gas from the Turonian formation in the Yuzhno Russkoye gas field is currently being tested. Several Turonian wells with depths between 810 and 840 meters are currently in test operation, from which more than 650 million cubic meters of natural gas have so far been recovered. Compared with the deeper Cenomanian layer that has been developed so far, production from the Turonian formation is considered difficult. The reservoirs are



The Achimgaz joint venture produces around 17 million cubic meters of natural gas per day.



Siberia's cold weather is a major challenge for the people and technology.

subject to low temperatures, which mean that measures have to be taken to prevent hydrates from forming. In addition, there is high reservoir pressure and the reservoir rock has low permeability. Severneftegazprom has taken on a pioneering role in developing the Turonian formation, for which little practical experience has been gained in Russia to date. Combining the technological competence and expertise of the partners is crucial for the successful development and realization of the project. Severneftegazprom plans to carry out large-scale development of the Turonian layer from 2020.

In addition, sandstone formations in Lower Cretaceous and Jura strata, which are up to 4,000 meters deep, have been undergoing testing in the Yuzhno Russkoye field since April 2014. Six exploration wells were completed in 2017. Two further exploration wells in the Jurassic layer are planned for 2020.

The third joint project in Russia is the German-Russian joint venture OOO **Wolgodeminoil**. The company, which produces crude oil and natural gas, is operated by Wintershall together with RITEK, a subsidiary of the Russian crude oil producer PAO LUKOIL (50:50). Last year Wolgodeminoil celebrated its 25th anniversary, which makes it the longest-running joint venture between a Russian company and a western European partner aimed at producing hydrocarbons. Today, the joint venture operates in three areas near Wolgograd covering a surface area of more than 13,000 square kilometers, and is conducting extensive surveys there to find new reservoirs. Wolgodeminoil produces crude oil and natural gas from ten fields. Other fields are being developed or prepared for development. Around 4.8 million barrels of oil equivalent were produced in 2017.

### Infrastructure projects

The **Nord Stream** Baltic Sea pipeline was built between April 2010 and October 2012, and has been fully operational since the beginning of October 2012. Extending over a length of 1,220 km, it links the gas reserves in Siberia directly with Germany via two parallel pipelines. Both strings together have a transport capacity of up to 55 billion cubic meters of natural gas a year. Wintershall has a 15.5% share in the project.

Nord Stream is connected to the existing European natural gas pipeline network via the connecting pipelines OPAL (Ostsee-Pipeline-Anbindungs-Leitung – Baltic Sea Pipeline Link) and NEL (Nordeuropäische Erdgasleitung – North European Gas Pipeline). The 480-km OPAL pipeline runs from where Nord Stream comes on land at Lubmin near Greifswald to the Czech Republic, while the 440-km NEL pipeline runs from Mecklenburg-Western Pomerania to Lower Saxony.



The Wolgodeminoil joint venture produced 4.8 million boe from ten fields in southern Russia.



OPAL has an annual transport capacity of 36 billion cubic meters and NEL around 20 billion cubic meters of natural gas.

### **A role model for cooperation**

The “**Scientific and Technical Cooperation**” (STC) has been setting standards in Russian-German relations for 25 years. The joint initiative set up by Wintershall and Gazprom promotes the exchange of experience and know-how between the two companies. Employees from Wintershall, Gazprom and BASF are developing innovative solutions and new strategies in fields such as energy savings, the development of gas and gas condensate reservoirs, improving efficiency in planning, the implementation of infrastructure projects as well as environmental protection and safety. At the end of 2016, a new STC agreement was drawn up that provides for joint projects from 2017 to 2019 and also secures efficient co-operation in the future.

In addition, Wintershall has also been running the successful **training program** for Gazprom executives for more than 25 years.

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