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CLIMATE DISASTER

... stranded asset, geopolitical hornets' nest –

Why Nord Stream 2 is a bad deal.

Gas is part of the problem, not part of the solution

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1. Executive summary

Nord Stream 2 is part of a system of underwater pipelines in the Baltic Sea intended to transport gas over 1200 km from Russia to Germany. The pipeline would connect gas facilities in Ust-Luga in the Leningrad region with a terminal in Lubmin, a small town on Germany's Northeastern coast. Nord Stream 2 is disastrous for the climate and not compatible with the Paris Agreement's goal of limiting global warming to 1.5°C as agreed upon in the Paris climate accord. The pipeline would cause CO_2 emissions of 100 million tons per year, and this figure does not take the additional methane leakages in the project's supply chain into account. As gas demand is decreasing across Europe, Nord Stream 2 will likely become yet another stranded fossil fuel asset. The project is primarily being pushed forward for geopolitical reasons and despite US sanctions. Russia aims to bypass the traditional gas transit country Ukraine, while Germany's government is seeking to become the main gas trader in Central Europe.

This briefing paper outlines the involvement of Nord Stream 2 AG owner Gazprom and the five financiers of the project: Wintershall Dea, Uniper, OMV, Shell, and Engie. All of these companies either have long-term contracts with Gazprom or joint gas and oil operations in Russia, some of which lie in gas fields that will feed Nord Stream 2. The gas for Nord Stream 2 comes from the Yamalo-Nenets Autonomous Okrug in Western Siberia. Its extraction and transport is causing severe ecological damage. It is also destroying the livelihoods of the Yamalo-Nenets, the region's Indigenous reindeer herders, who are already impacted by climate change.

Finally, the paper explains why Nord Stream 2 will have a disastrous impact on the climate. Fossil gas plays a key role in fuelling the climate crisis. It consists of 75-100% methane, which is 86 times more potent than CO_2. Methane leakages along the production chain cause enormous greenhouse gas emissions. Gas is neither a "bridge fuel", nor can it be turned into hydrogen without causing substantial emissions.

Main conclusions and demands:

- The participation in Nord Stream 2 poses an economic and reputational risk not only for the financing companies Engie, OMV, Shell, Uniper, and Wintershall Dea, but also for their respective investors and bankers.
- The construction of the pipeline is not compatible with the 1.5°C goal and needs to be stopped immediately.
- Further financial investments in the pipeline must be halted immediately.
- Investors and banks should cease all support for companies developing gas or oil resources in Yamalo-Nenets Autonomous Okrug.
- The German government needs to leave the Energy Charter Treaty (ECT). The arbitration case by Nord Stream 2 is yet another example of how this treaty undermines democratic procedures to protect fossil fuel interests and infrastructure.

2. The interests behind Nord Stream 2

The route

The planned route for Nord Stream 2 covers more than 1200 km from Ust-Luga in the Saint Petersburg region to Lubmin close to Greifswald. The pipeline will transport fossil gas from the Yamalo-Nenets Autonomous Okrug (YaNAO) region in Russia to the Baltic coast of Germany. The planned route runs on exactly the same path as the existing Nord Stream pipeline. If completed and fully used, Nord Stream 2 would add another 55 billion cubic meters (bcm) to Germany's annual gas imports.

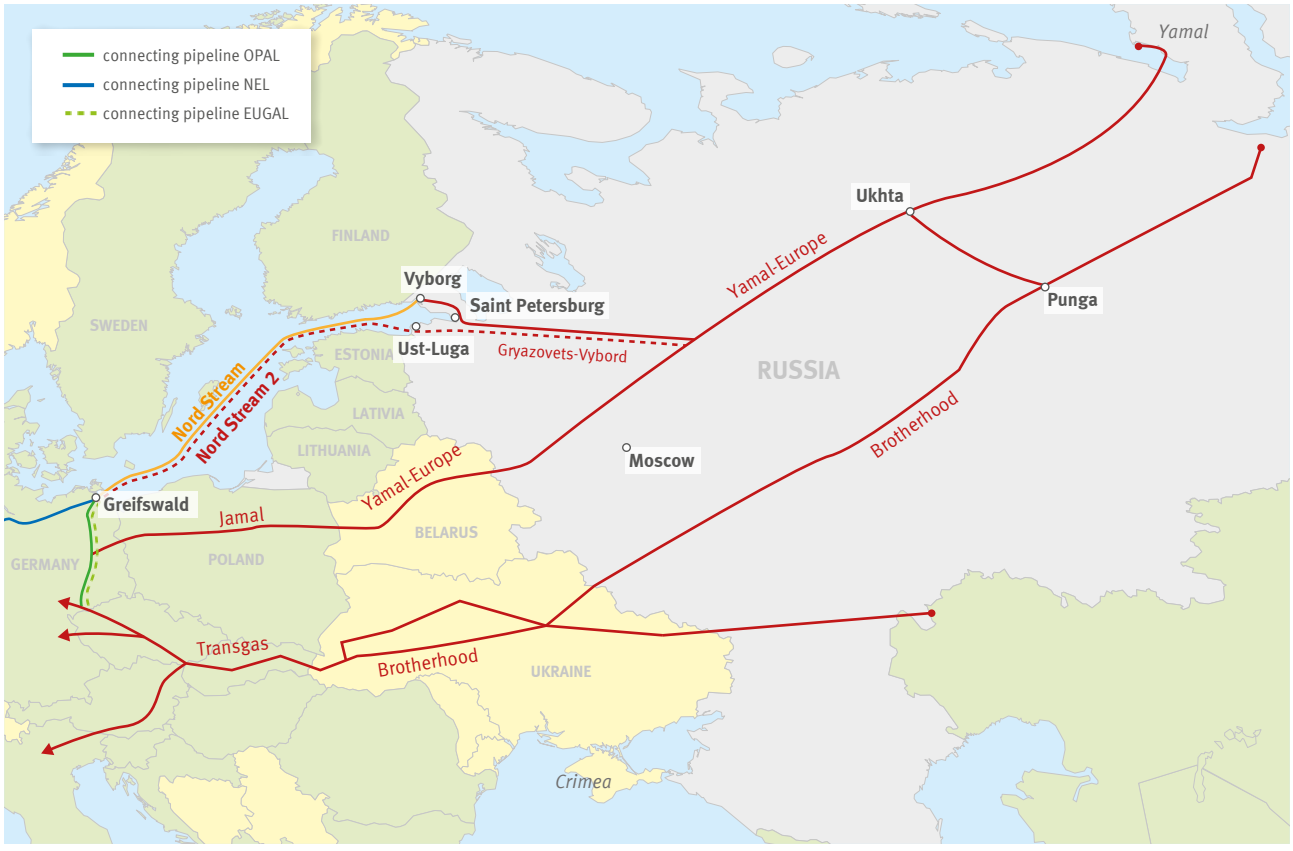
The climate

From a climate perspective, Nord Stream 2 is disastrous. The pipeline would cause CO_2 emissions of 100 million tons per year, disregarding the additional methane leakages in the supply chain. In fact, the pipeline would lock Europe into fossil fuel dependency for decades to come. This contradicts the urgent need to sharply decrease the use of all fossil fuels - including gas - in order to achieve the Paris climate goals. If finalized, Nord Stream 2 will either contribute to wrecking the climate or quickly turn into an expensive stranded asset.

Geopolitical interests: Russia vs. Ukraine and the US

Nord Stream 2 has a history of polarizing opinions and increasing political conflicts. Proponents claim it is just another pipeline, a purely commercial project covering Europe's supposed increasing demand for gas in light of decreasing internal gas production. Opponents see it as a geopolitical instrument to bypass the traditional gas transit country Ukraine, and undermine the sovereignty of Ukraine, Poland, and the Baltic States. High level actors on both sides include the German and Russian government, as well as former chancellor Gerhard Schröder supporting Nord Stream 2, and the US government, the EU Commission, the Polish and French governments opposing it.

The US sanctions are based on the argument that Nord Stream 2 would increase Europe's dependence on Russian gas and heighten the country's influence on EU members. The US also views the pipeline as a threat to Ukraine in light of Russia's aggressions towards the country, such as the recent troop deployments near the Ukrainian bor-



The route of Nord Stream 2 and its connections to the origin of the gas in Yamal, Russia, plus a selection of the other main gas pipelines from Russia to Europe.

French Prime Minister Francois Fillon; Gerhard Schröder, Chairman of the Shareholders' Committee and former German Chancellor; German Chancellor Angela Merkel; Dutch Prime Minister Mark Rutte; Russian President Dmitry Medvedev; European Union Energy Commissioner Guenther Oettinger and industry representatives from E.ON AG, Gazprom, BASF turn a wheel to symbolically start the flow of gas through line 1 of the Nord Stream twin pipeline system. ©Nord Stream AG

der, the annexation of Crimea and the support of separatists in Eastern Ukraine. In 2019, more than a third of Russia's gas exports to the EU passed through Ukraine. It is feared that without the need to transit the country for gas exports, Russia may take further steps to destabilize Ukraine. Due to the US sanctions, the construction of Nord Stream 2 has been considerably delayed. 18 companies that were involved in the project have left it to avoid the risk of losing future business in the US. Most of these companies are insurers, including Munich Re, Axa and Zurich. Other companies - e.g. the German construction company Bilfinger SE- also quit the project.

Germany as a gas hub

While Germany has enough gas for its own consumption without Nord Stream 2, the gas industry and the government have an interest in making Germany the main gas hub in central Europe. Over the past few years, the German gas trading company Gaspool has seen rapid growth in trading volumes and may now become the main trader of Gazprom's gas arriving through Nord Stream 2. Part of the incoming gas might go to the Netherlands, replacing declining domestic production.[1] Via the newly constructed EUGAL pipeline the incoming gas can be transported further South and East towards Czech Republic.

The prospect of Germany becoming a major gas hub has led the German government to turn a blind eye towards the increasing authoritarianism of Russia's regime. The German government also ignores the severe environmental and human rights impacts in the Yamal region, where the gas is produced. It refuses to acknowledge the blatant contradiction of building a new gas pipeline despite the need for massive cuts in greenhouse gas emissions in order to achieve the Paris climate goals.

The reputational risk

The Russian government's handling of critics such as Navalny and its increasingly authoritarian repression of civil society has led to wide-spread criticism of the Nord Stream 2 project throughout Europe. In late January 2021, the European parliament called for a halt to Nord Stream 2 after the arrest of Russian opposition leader Alexei Navalny. The participation in Nord Stream 2 is therefore not only an economic, but also a reputational risk for companies such as Engie, OMV, Shell, Uniper, and Wintershall Dea as well as for their respective investors and financiers.

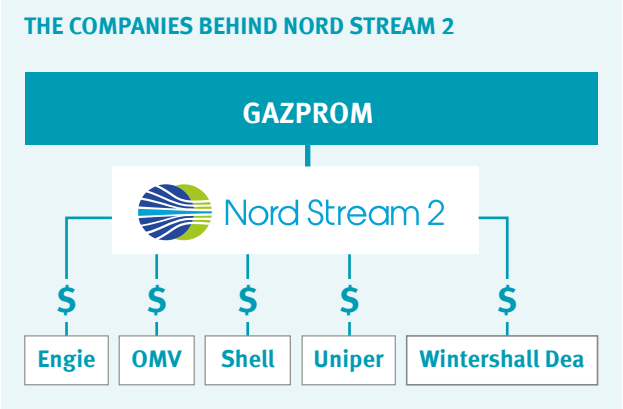
1 www.montelnews.com/en/story/germany-to-become-key-to-eu-gas-transit--analysts/1057564

Pipe laying barge. ©Shutterstock_Alexey Alexandrov

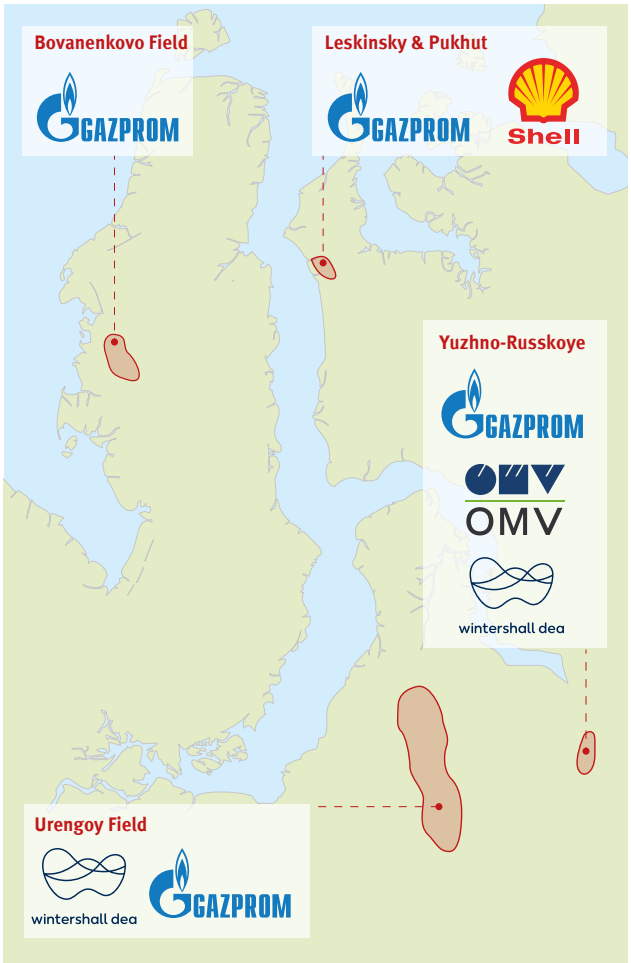
3. The companies behind Nord Stream 2

The Nord Stream 2 project is being implemented by Nord Stream 2 AG, a company established for planning, construction and subsequent operation of the pipeline. The company is based in Zug, Switzerland, and is owned by the Public Joint Stock Company (PJSC) Gazprom. Nord Stream 2 AG signed financing agreements for the project with Engie, OMV, Shell, Uniper and Wintershall Dea,[2] which are also all involved as shareholders in the original Nord Stream 1 pipeline. According to the agreement, each company's contribution should amount to €950 million.

All of the companies either have long-term contracts with Gazprom or joint gas and oil operations in Russia. Large gas fields are owned and operated by Winter-



The companies behind Nord Stream 2.



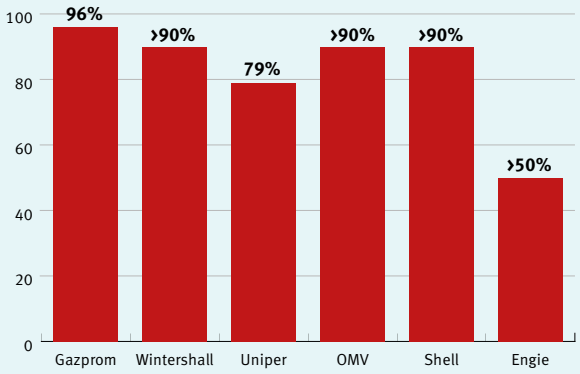
Gas fields of the companies involved in Nord Stream 2 in the Yamalo-Nenets Autonomous Okrug.

2 www.nord-stream2.com/company/shareholder-and-financial-investors/

shall, OMV, Shell, and Gazprom in the Yamalo-Nenets Autonomous Okrug (YaNAO). Most gas that is fed into Nord Stream 1 and 2 originates from this area.

Wintershall Dea and OMV both disclosed that they so far financed Nord Stream 2 with €730 million each. Responding to the growing risk of US sanctions, Wintershall Dea announced in its 2020 annual report that no "further disbursements (...) are planned".[3] Conflicting statements are being made about who bears the financial risks of the loans that have already been issued if Nord Stream 2 is not completed. In a Reuters interview, Uniper's CEO left the question open by saying: "if (Nord Stream 2) would never be finished [...] the question is can we get our money back or not".[4]

Fossil Fuel Share of Revenue



The companies behind Nord Stream 2 are still heavily dependent on fossil fuels. All derive at least 50% of their revenue from fossil fuels, 4 out of 6 more than 90%.

Use of the Energy Charter Treaty (ECT) to secure Nord Stream 2's interests

In 2019, the Nord Stream 2 AG demonstrated its determination to construct the pipeline against all resistance. The company filed an Energy Charter Treaty (ECT) arbitration against the EU Commission on the grounds of an amendment to the EU gas directive.[5] The amendment foresees that gas pipeline and transmission operators in the EU are obliged to unbundle transmission systems. They must establish a system of non-discriminatory third-party access to the transmission and distribution network based on published tariffs. Nord Stream 2 AG argued that the amended directive is a deliberate discrimination against Nord Stream 2 and would therefore undermine the value of its investment.

Nord Stream 2 AG claimed that dealing with an unanticipated regulatory regime would result in potential losses of up to €8 billion. The company submitted a notice of arbitration against the EU under the Energy Charter Treaty in September 2019.[6] The first arbitrator nominated by Nord Stream 2 AG was disqualified due to being too close to the company. The company addressed the European Court of Justice in the same matter, but the court dismissed the case in May 2020.[7] The Nord Stream 2 AG has since appealed the decision. The ECT case is listed on UNCTAD's website as pending[8] and a decision is not expected before 2022.

Note: You can find more information on the ECT and other ECT cases in the Urgewald paper "Meet the Energy Charter Treaty", *https://urgewald.org/shop/meet-energy-charter-treaty.*

3.1 The company behind the pipeline: Gazprom

Gazprom's involvement in Nord Stream 2

As the sole owner of the Nord Stream 2 AG, the stakes in the project are highest for Russia's state-owned company Gazprom. For years, the company has followed a strategy of both diversifying its export markets and the export routes to the established markets in Western Europe. Gazprom has been looking for new sales markets in East Asia, where fossil gas is sold at significantly higher prices. For large quantities of gas from Western Siberia, however, European markets remain more attractive due to their closer proximity.

The construction of Nord Stream 1 and now also Nord Stream 2 is part of a larger strategy to create new access routes that connect Siberia's gas production with European consumers. Other planned but ultimately failed projects

3 Wintershall Annual Report p. 123, www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/022621-nord-stream-2-gas-link-developer-shrugs-off-wintershall-dea-loan-move
4 www.reuters.com/article/us-uniper-results-nordstream-2-idUSKCN2570M2
5 https://trade.ec.europa.eu/doclib/docs/2019/july/tradoc_158069.pd_Redacted.pdf
6 www.iisd.org/itn/en/2019/12/17/nord-stream-2-pipeline-spat-with-eu-evolves-into-ect-dispute/
7 www.curia.europa.eu/jcms/upload/docs/application/pdf/2020-05/cp200062de.pdf
8 www.investmentpolicy.unctad.org/investment-dispute-settlement/cases/1008/nord-stream-2-v-eu

such as South Stream were designed to fulfil a similar purpose. All of these projects compete or would have competed with existing transit routes through Ukraine and Poland, thereby jeopardizing income from transit fees. Through its subsidiaries and joint venture participations in Wingas, GASCADE, and other companies, Gazprom is also a major player in the German and Western European gas transport and trading sectors. The company is active along the whole value chain, from gas production in Western Siberia to marketing to German and European customers.

The company has recently made headlines thanks to its major involvement in the scandalized "Environment and Climate Foundation" of the German state Mecklenburg-Vorpommern. Gazprom has the right to appoint the managing director and determine the foundation's business principles. It has declared it will invest 20 million Euros in the foundation while the state of Mecklenburg-Vorpommern has only invested 200,000 Euros. The foundation's main purpose is not climate protection, but ensuring the economic business operations of the Nord Stream Project against the backdrop of the US sanctions.[9]

Company profile

Gazprom emerged from the structures of the Soviet Gas Ministry after the collapse of the Soviet Union in 1991. Over 50% of its shares are owned by the Russian government. Gazprom is Russia's largest oil and gas company and one of the world's largest gas producers. In 2020, the company produced 459 bcm of gas.[10] At present, the company is actively implementing large-scale gas development projects in the YaNAO region, the Arctic shelf, Eastern Siberia and the Russian Far East, as well as a number of hydrocarbon exploration and production projects abroad. The company owns the world's largest gas transmission system, the total length of the network within Russia amounts to 175 thousand kilometres.[11] Gazprom exports gas to more than 30 countries. The largest importers are Germany, Italy, Austria, Turkey, and France. The company is a major gas supplier in all Central and Eastern European countries.

Climate ambitions and major controversies

Gazprom is number 4 on the Climate Accountability Institute's list of worldwide carbon majors, ranked on their cumulative CO_2 and methane emissions.[12] Gazprom does not even disclose its scope 3 emissions, although they account for more than 80% of the company's emissions.[13] Gazprom's gas extraction activities for Nord Stream 2, including on the Yamal peninsula, involve serious environmental and human rights transgressions. See chapter 4 of this briefing for more information.

Gazprom is also accused of abusing its dominant market position, especially in Eastern Europe, and of nepotism. In 2009, a gas price dispute between Russia and Ukraine led to a cut-off of Russian natural gas supplies to Europe in mid-winter.[14] According to Boris Nemtsov (a former first deputy prime minister) and Vladimir Milov (a former deputy energy minister), Vladimir Putin "looked after the company, appointed people close to him to key positions in it and delved in detail into its activity" from the beginning of his rule.[15]

3.2 A perfect partner: Wintershall Dea

Wintershall Dea's involvement in Nord Stream 2

Wintershall Dea has been Gazprom's most reliable corporate partner in Germany for many years.[16] After the collapse of the Soviet Union, Wintershall Holding GmbH helped Gazprom secure access to Germany's gas markets by collaborating in several pipeline projects and joint ventures. By establishing itself as a reliable partner, Wintershall advanced its own strategic goals to obtain access to Siberia's vast gas fields and expand its production in Russia. In two successive asset swaps in 2007[17] and 2013[18] Wintershall acquired several produc-

9 www.duh.de/fileadmin/user_upload/download/Pressemitteilungen/Energie/210112_DUH_Stellungnahme_Stiftung_NS2_geschw%C3%A4rzt.pdf
10 Rystad Energy, 2020
11 www.gazprom.com/about/
12 www.climateaccountability.org/carbonmajors_dataset2020.html
13 www.transitionpathwayinitiative.org/publications/25?type=NewsArticle
14 www.reuters.com/article/us-russia-ukraine-gas-timeline-sb-idUSTRE50A1A720090111
15 Putin and "Gazprom", Boris Nemtsov, Vladimir Milov, 2014
16 Michael Sander. (2010). Deutsch-russische Beziehungen im Gassektor. S.95 www.nomos-shop.de/titel/deutsch-russische-beziehungen-im-gassektor-id-79491/; Jonas Grätz. (2013). Ziemlich beste Freunde in Osteuropa - Unter Strom Heft 7 2013. www.zeitschrift-osteuropa.de/hefte/2013/7/
17 www.gazprom.com/press/news/2007/october/article63949/
18 www.gazprom.com/press/news/2013/december/article181323/

tion licenses in the Urengoy field and the Yuzhno-Russkoye field, a major source that currently feeds Nord Stream.[19] In return, Gazprom acquired full and part ownership of mid- and downstream assets in Germany and Western Europe. This includes some of the largest gas storage facilities in Germany, gas-pipelines, and gas trading companies, as well as production licences in the North Sea.[20]

Via their joint venture WIGA Transport GmbH, Wintershall Dea and Gazprom jointly own the NEL and OPAL pipelines that connect Nord Stream to the western and southern gas-networks of Germany and Central Europe. WIGA is also the owner of GASCADE, another midstream company that runs a 2900 km pipeline-network in Germany. It will be the operator of the EUGAL pipeline that would connect Nord Stream 2 to the southern grid.[21]

Considering this long partnership, Wintershall Dea's recent announcement to stop financing Nord Stream 2 before all its obligations are met came as a surprise.[22]

Company profile

Wintershall Dea is Germany's largest upstream oil and gas company. Fossil gas currently makes up 70% of its production, of which roughly two-thirds are extracted in Russia.[23] Other major production and expansion regions are the Barents Sea in Norway, the North Sea, Qatar, Argentina, Brazil, and Mexico.

Since 1969, ⅔ of the company have been owned by German chemical giant BASF. The remaining third is held by LetterOne, which is part of the AlfaGroup conglomerate run by the Russian oligarchs Michael Fridman, German Khan, Pjotr Aven, and Alexei Kuzmichev. Pjotr Aven and the Alfa Bank featured prominently in the Muller Report, which investigates Russian influence on the 2016 US elections.[24] The company is planning its Initial Public Offering in autumn 2021.[25]

Climate ambitions and major controversies

Despite Wintershall Dea's announcements that it will take active measures against the climate crisis, the company is planning to expand its fossil fuel production by 30% in the next 3 years.[26] While Wintershall Dea has set targets for lowering greenhouse gas emissions in its own operations[27], it has set no targets for the emissions from its fossil gas and oil products which are going to increase significantly.

3.3 The other German player: Uniper

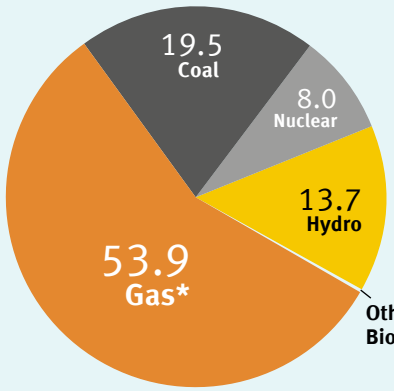
Uniper's involvement in Nord Stream 2

In 2016, the German energy company E.on split off the coal, oil and gas-dominated part of its business to create Uniper. While it was still operating as part of E.on, Uniper became the second German company to join Gazprom in constructing and operating Nord Stream 1. It did so to follow a wider strategy to secure access to the gas production sector in Siberia, since Gazprom made the acquisition of a 25% share in the Yuzhno-Russkoye field conditional on the company's participation in Nord Stream 1.[28] Uniper is now a financier of Nord Stream 2.

Company profile

Today, Uniper is a publicly listed company. Its principal owner is the Finnish utility Fortum, which holds more than

2020 Power generation by energy source in %
(data below in TWh) **Total: 95.1**



*includes oil-fired power generation

19 www.omv.ru/en-ru/activities
20 www.ogj.com/drilling-production/production-operations/field-start-ups/article/17245589/wintershall-gazprom-swap-natural-gas-assets
21 www.wiga-transport.de/; www.gascade.de/netzinformationen/unser-leitungsnetz
22 www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/022621-nord-stream-2-gas-link-developer-shrugs-off-wintershall-dea-loan-move
23 www.wintershalldea.com/en/investor-relations/2020-annual-report
24 www.time.com/5592739/donald-trump-petr-aven-alfa-bank/
25 www.deraktionaer.de/artikel/aktien/basf-die-tochter-legt-vor-was-kommt-morgen-20226346.html?feed=directrssfeed
26 www.reuters.com/article/wintershall-ipo-delay-idUSL8N2B25LC
27 www.wintershalldea.com/en/newsroom/esa-press-release
28 Michael Sander. Deutsch-russische Beziehungen im Gassektor. S. 231

75% of Uniper's shares. Fortum's main shareholder is the Finnish state, which owns 50.76 % of the company's shares. Uniper's business activities are focused on energy production from coal, gas, nuclear and hydro as well as energy trading. Uniper divested its upstream activities including its shares in Yuzhno-Russkoye.[29]

The company is primarily active in Russia, Germany, the Netherlands, and the United Kingdom, where it generates roughly ¾ of its electricity. Its Russian gas power plants, run by its subsidiary Unipro, account for nearly 40% of total energy production. Fossil energy sources remain the cornerstone of Uniper's business model. Nuclear and hydro power plants in Germany and Sweden accounted for 25% of the company's total energy production in 2020.[30]

Climate ambitions and major controversies

As recently as 2019, the company opened a new coal power plant in Germany, Datteln IV, thereby adding 1 GW of new coal-capacity to the German energy mix.[31] According to Uniper's plans, this coal plant will run until 2038. Meanwhile, in March 2020, Uniper SE's chief executive officer repeated his threat to sue the Netherlands for its coal phase-out law under the Energy Charter Treaty, seeking compensation for shutting down the Maasvlakte coal power plant.[32]

Looking beyond coal, Uniper is expanding its reliance on fossil gas via its involvement in Nord Stream 2. The company is planning a three-fold expansion of its Liquefied Natural Gas (LNG) portfolio within four years.[33] It is also drawing up long-term gas contracts that extend over several decades.

The company announced that it only aims to decarbonise its European power production by 2035 without further explanations, but failed to provide any explanation or plan for how this goal would be met. It has not set targets for other sectors of its business such as heat production and gas trade. Uniper's announcement is an empty promise and is starkly contradicted by its actual business activities.

3.4 The new producer in Siberia: OMV

OMV's involvement in Nord Stream 2

Although OMV has close historical ties to Russia since it emerged from the Soviet Mineral Oil Administration (SMV) in the 1950s, it only recently started production activities in Russia itself. In 2017, OMV bought Uniper's shares in the Yuzhno-Russkoye field. In October 2018, it announced plans to join Wintershall Dea and Gazprom as a co-owner in the Blocks 4A and 5A in the Urengoy field.[34] Apart from its participation in Nord Stream 2, OMV played a leading role in the failed project development of its sister project South Stream.[35]

CEO of OMV, Rainer Seele, meets Vladimir Putin.
©Getty Images_SergeiKarpukhin

Company profile

OMV is an integrated oil and gas company with activities in oil and gas production, refining, and transport as well as marketing of refined products via gas stations. The company also operates one gas power plant in Romania.[36] Over 30% of OMV's publicly traded shares are held by the Austrian government and another 24.9% by IPIC, the holding company of the United Arab Emirates (UAE). A key figure in OMV's recent history is Rainer Seele, CEO of the company since 2015. In his former roles as head of strategy and later CEO of Wintershall, Seele was one of the key drivers behind the integration of Russian production sites into the European markets.

29 www.gazprom.com/projects/yuzhno-russkoye/
30 https://ir.uniper.energy/download/companies/uniperag/Annual%20Reports/2021-03-04_FY2020_Uniper_Group_Annual_Report_en.pdf
31 www.uniper.energy/power-generation/countries/germany
32 www.bloomberg.com/news/articles/2021-03-04/uniper-ceo-mulls-taking-netherlands-to-court-over-coal-exit
33 https://ir.uniper.energy/download/companies/uniperag/Annual%20Reports/2021-03-04_FY2020_Uniper_Group_Annual_Report_en.pdf
34 www.upstreamonline.com/field-development/yet-another-delay-as-omv-again-puts-off-entry-into-russian-gas-venture/2-1-957531
35 www.gem.wiki/South_Stream_Gas_Pipeline
36 www.omv.com/services/downloads/00/omv.com/1522184187414/omv-annual-report-2019

Climate ambitions and major controversies

OMV's announced climate ambitions comprise a mix of emission intensity targets for its own operations and emphasising the role of "low- and zero emissions" products in its portfolio. OMV includes fossil gas in its "low emissions products" category, which is highly misleading.[37] OMV does not have a fossil fuel phase-out plan and continues to expand its reserves through exploration and development activities, such as in New Zealand[38] and the Arctic.[39]

3.5 Expanding its business in Russia: Shell

Shell's involvement in Nord Stream 2

Royal Dutch Shell is a partner of Nord Stream 2 and is also involved in other upstream and midstream Russian oil and gas projects. The company has continuously expanded its business relationship with Gazprom over the last years. In 2010, it officially signed a strategic partnership on oil and gas with Gazprom.

Gazprom and Shell are jointly engaged in the Sakhalin II project, which includes Russia's first LNG plant. In January 2020, Gazprom Neft and Shell agreed to expand their joint venture, Salym Petroleum Development. The company's portfolio will include a license for exploration and production rights of conventional hydrocarbon reserves in the Salymsky 2 block.[40] In December 2020, Gazprom Neft and Shell agreed to establish a joint venture to study and develop the onshore Leskinsky and Pukhutsyayakhsky license blocks on the Gydan Peninsula, which are partly located in the Yamalo-Nenets Autonomous district.

Company profile

Shell is a British-Dutch multinational company. It is Europe's biggest oil and gas company and the fifth-largest in the world, measured by its 2020 revenues.[41] Although Shell is mostly associated with its oil business, it is one of the world's largest producers of liquefied natural gas since the takeover of British Gas in 2016.

Climate ambitions and major controversies

Shell is number 6 on the Climate Accountability Institute's list of worldwide carbon majors, ranked on their cumulative CO_2 and methane emissions.[42] Shell plans to continue exploring new fossil energy sources, is approving new extraction projects and has no plans to decrease its oil and gas production by 2030.[43]

In April 2020, Shell announced it would become a net-zero company by 2050 in regard to its scope 1 and 2 emissions. However, this commitment does not cover scope 3 emissions from the use of Shell's oil and gas products, even though these account for around 85% of the company's emissions. For the latter, Shell has only set an intensity target, which is misleading and offers no guarantee that a reduction in absolute CO_2 emissions will actually take place. In fact, while Shell's emissions intensity metric, the "Net Carbon Footprint", remained stable from 2016-2018, its absolute emissions increased from 733 to 777 million tons CO_2 equivalent.[44]

The company has come under increasing pressure from grassroots groups and legislators to address its emissions. In December 2020, first hearings took place in a court case against Shell in the Netherlands. The plaintiffs claim that Shell's activities threaten human rights by failing to act and cut its carbon emitting activities in alignment with Paris Agreement targets. Concrete demands are for Shell to reduce its greenhouse gas output by 45% from 2019 levels by 2030.

37 www.omv.com/en/sustainability/climate-protection/key-targets
38 www.rnz.co.nz/news/national/429860/omv-planning-2022-in-fill-drilling-campaign-at-maui
39 https://thebarentsobserver.com/ru/node/231
40 www.gazprom-neft.com/press-center/news/gazprom_neft_and_shell_to_expand_their_joint_project_to_develop_the_salym_group_of_fields_in_khmao/
41 www.fortune.com/global500/
42 www.climateaccountability.org/carbonmajors_dataset2020.html
43 www.priceofoil.org/content/uploads/2020/09/OCI-Big-Oil-Reality-Check-vF.pdf
44 https://reports.shell.com/sustainability-report/2019/servicepages/downloads/files/shell_sustainability_report_2019.pdf, p.41

3.6 The big French gas player: Engie

Involvement in Nord Stream 2

Engie has a long-time business relationship with Gazprom. Gazprom Export and Engie currently have five major long-term contracts for Russian gas supply to France, of which the first two were signed in 1975.[45] In 1992, Engie (then Gaz de France) opened a representative office in Moscow. At the end of 2006, Gazprom Export and Engie signed a major package of commercial agreements which covered the extension of their contracts through 2031. The purpose of this agreement was to transfer operating licenses in the French retail market to Gazprom and sell new volumes of gas delivered through the Nord Stream pipeline.[46]

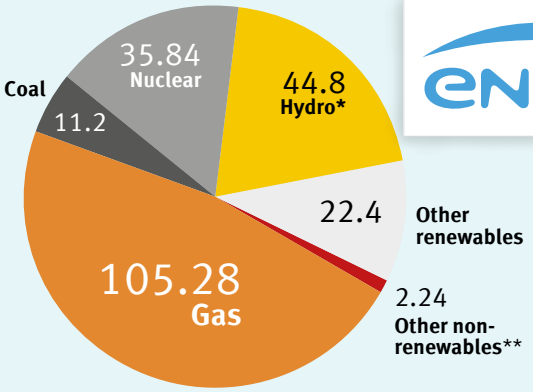
Company profile

Engie, which used to be Gaz de France and then GDF Suez, is a French energy company that operates globally. It is partly owned by the French government. It produces energy in France, operates the nuclear power plants Doel and Tihange in Belgium through its subsidiary Electrabel and owns more than 3 GW of coal energy generation in Chile, Brazil, Peru, Portugal, and Morocco.[47]

Climate ambitions and major controversies

In 2016, Engie announced that it would stop producing electricity from coal. Instead of closing down its coal plants, Engie, however, opted to sell them. Between 2016 and 2019, Engie sold coal plants across Germany, the Netherlands, Indonesia, and Thailand.[48] Engie has also converted coal-fired plants into fossil gas or biomass plants, the latter of which are usually fired with wood. These plants often have high carbon impacts as wood is transported from the US to Europe or sourced from intensively managed plantations. Firing biomass plants with wood also poses an increasing threat to biodiversity.[49] In February 2021, Engie committed to giving up its remaining coal assets in Europe by 2025, and in the rest of the world by 2027. However, the company did not specify whether those assets will be sold, converted or actually closed.

2020 Power generation by energy source in %
(data below in TWh) **Total: 224**



** includes Hydro Pump Storage*
*** this entry seems to comprise fuel oil, diesel as well as special gas-fired generation assets*

Converting coal plants into fossil gas plants further increases the reliance on fossil fuels and locks-in the use of fossil fuels for decades to come. To feed its gas plants, Engie operates or has interests in five LNG-terminals: three in France, one in Chile and one in Puerto Rico.[50] It is number 11 among the top 25 developers of LNG import capacity according to Global Energy Monitor.[51] Engie intended to buy large amounts of LNG from the US company NextDecade, which plans to develop the contested Rio Grande LNG export facility in Texas. The negotiations were dropped in November 2020 after the French government pushed the company to delay or block the deal in view of concerns about the environmental impact of fracked gas from Texas, including the high methane leakage rates.[52] While this deal fell through, in December 2020 Engie Australia and New Zealand signed a memorandum of understanding to co-develop an LNG import terminal in Geelong, South Australia.[53]

45 www.gazpromexport.ru/en/partners/france/
46 www.gazpromexport.ru/en/partners/france/
47 www.ember-climate.org/wp-content/uploads/2021/02/Utilities-Beyond-Fossil-Fuels-ENGIE.pdf, p.1
48 www.ember-climate.org/wp-content/uploads/2021/02/Utilities-Beyond-Fossil-Fuels-ENGIE.pdf, p.1
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50 www.engie.com/sites/default/files/assets/documents/2020-03/ENGIE%20-%20URD%202019%20VF%20vD%C3%A9f_0.pdf, p.39
51 www.globalenergymonitor.org/wp-content/uploads/2020/07/GasBubble_2020_r3.pdf, p.16
52 www.reuters.com/article/uk-engie-lng-france-idUKKBN27J282
53 www.engie.com.au/wp-content/uploads/ENGIE-signs-MoU-with-Viva-Energy.pdf

Fossil fuel infrastructure beyond the Arctic Circle. ©Shutterstock_Evgenlitva

4. Where the gas comes from: Devastating effects on Indigenous livelihoods and the environment in Yamal

The source of Nord Stream 2 Gas: Yamalo-Nenets Autonomous Okrug

Nord Stream 2 will transport gas that originates from the Russian Arctic province of Yamalo-Nenets Autonomous Okrug (YaNAO). 90% of Russian gas comes from YaNAO.[54] All of the major Russian oil and gas companies have a large stake in this region and it is the most valuable resource area for Gazprom and Novatek, the two biggest gas producers in Russia. YaNAO is the most extraction-intensive region for gas reserves in Russia, with explored gas reserves of about 16 trillion cubic metres. The region accounts for 23% of the world's explored reserves.[55] Large gas fields are owned and operated by the Nord Stream 2 financiers Wintershall, OMV, Shell and Gazprom in YaNAO (see map in chapter 3).

Around 41,000 Nenets Indigenous People live in the YaNAO. Since the 1990s, the number of reindeer in the region has grown to become the largest in the world with as many as 800,000. Around 5,000 Nenets are actively engaged in year-round reindeer herding, which is the YaNAO's main industry apart from oil and gas extraction.[56] It is the only region in Russia, where, after the end of the Soviet Union, reindeer herding did not decline, but substantially increased. This was largely due to the Nenet people experiencing a resurgence of indigenous culture and returning to traditional, non-state-controlled reindeer herding that is unparalleled elsewhere in the Arctic. Nenets is one of the very few indigenous languages in Russia not yet acutely threatened by extinction, principally because the language is still the vernacular among the nomads. The same is true for Nenets culture in general, which is to a large part defined by its non-participation in the Russian State.

However the livelihoods of Nenets Indigenous Peoples are under threat. Oil and gas exploration and extraction on the Yamal Peninsula has exploded in the last two de-

A family photo near the yurt in the Yamal tundra. ©Shutterstock_EvgeniiMitroshin

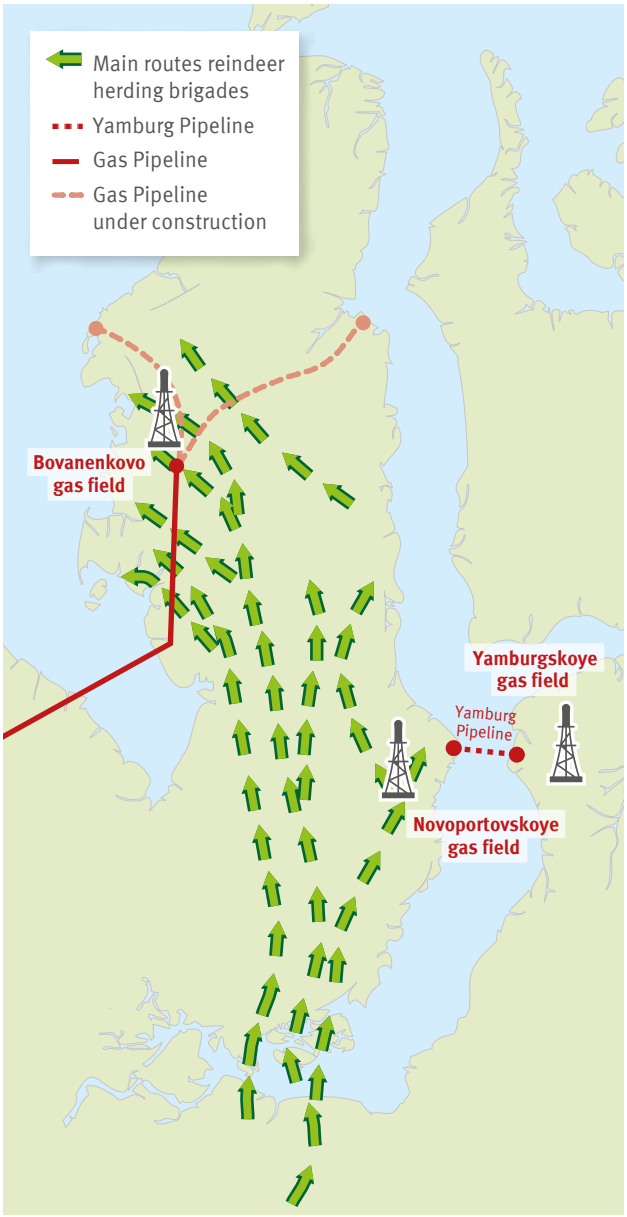
54 http://web.archive.org/web/20110606112011/http://www.kommersant.com/p-30/r_373/Yamalo-Nenets_Autonomous_Area/
55 https://cyberleninka.ru/article/n/oleni-i-gaz-strategii-razvitiya-yamala
56 https://tass.ru/obschestvo/4228040

cades, resulting in the loss of a huge amount of pastureland. Tensions between Indigenous Peoples and the oil and gas companies have risen correspondingly.

Information on relations between oil and gas companies and local Indigenous People are hard to come by. Like many Arctic regions, YaNAO is classified as a "border zone", even though it only borders the Arctic Ocean. Any outside visitors, including Russian citizens, have to obtain a special permit issued by the intelligence service FSB to enter the region. Once the visitor has managed to enter the region, it is extremely difficult and expensive to reach the places where reindeer herders live. There is a stark power imbalance between nomadic reindeer herders and the extremely wealthy extractive companies that are in almost complete control of the regional government.

Growing Russian authoritarianism and a climate of fear and intimidation means that Yamal has virtually no free civil society. Indigenous organisations are tightly controlled by the state and no independent observers are allowed. After speaking out on Yamal at the UN Forum on Business and Human Rights in 2018, a German human rights defender was banned from the country for 50 years.[57] Claims by extractive companies to have obtained Free, Prior and Informed Consent (FPIC) from the Nenets lack any credibility. Rather than reigning in the gas industry, the Yamal administration has on multiple occasions pondered mass slaughter of reindeer in order to drastically cut down on the headcount as areas of viable pastureland are rapidly shrinking.[58]

Traditional grazing and migration routes are being upended as a result of oil and gas exploration. On the Yamal Peninsula, the Bovanenkovo gas field - which is mainly operated by Gazprom - has removed around 170,500 hectares of deer grazing area. This makes up 3.5% of all pasture lands of the Yar-Sale Municipal Enterprise.[59] As a result, 165 families were forced to leave their homes, according to official data. Pipelines and roads are the main causes of ruptures to migration routes traditionally taken by the Nenets reindeer herders. They travel to summer pastures on the midwestern shores of the peninsular from April to October each year. The area is still under heavy construction: an extra pipeline (Yamburg) is being planned under the Gulf of Ob between the production sites of Yamburgskoye and Novoportovskoye, as well as 1,350 km of new railroads and 770km of oil and gas pipelines.



The migration routes of the Nenets reindeer herders on the Yamal Peninsula impacted by gas infrastructure.

New infrastructure in the region is often constructed without thorough environmental impact assessments. Environmental impact assessments are mostly conducted by the energy companies and sanctioned by local magistrates. A study of the new Yamburg pipeline by academics who looked into the assessment, was described as 'incomplete' and 'incorrect' in its judgement of how marine life would be affected by the presence of the pipeline.[60]

57 https://spcommreports.ohchr.org/TMResultsBase/DownLoadPublicCommunicationFile?gId=24932
58 www.znak.com/2017-09-18/na_yamale_nachalas_kampaniya_po_zaboyu_severnogo_olenya
59 www.gegenstroemung.org/Yamal_LNG_Report_INFOE.pdf
60 Source made available on request. Conclusion on the OVOS Report (Environmental Impact Assessment), "Gas Pipeline of External Gas Transport from the Novoportovsk Oil and Gas Condensate Field through the Gulf of Ob"

Oil spills are systematically underreported by companies operating in the Arctic. In 2016, oil and gas companies in Russia claimed that 50,000 tonnes of oil were spilled annually.[61] This number itself is staggering, but the actual amount could be 30 times as high. At the time, the Minister of Natural Resources and Environment C. Donskoy claimed that the real figure was close to 1.5 million tonnes annually.[62] The Federal Service for Hydrometeorology and Environmental Monitoring of Russia (Roshydromet) states that around 500,000 tonnes of oil products leak into the Arctic Ocean annually.[63]

Contamination of soil and water, including groundwater, is subsequently a major health problem. In 2016, a Greenpeace-initiated inspection of YaNAO found 18 areas contaminated by petroleum projects. This was mostly around oil and gas sites, but also along the River Ob that flows into the Gulf of Ob and whose fish stocks are crucial for the thousands of Indigenous Peoples who live along it.

The Arctic is one of the places most vulnerable to climate change. Temperatures in the Arctic are rising approximately 3 times faster than anywhere else on the planet. In 2020, the Yakut town of Verkhoyansk, one of the two coldest, permanently inhabited places on earth, reported a temperature high of 38 degrees Celsius.[64] In other areas 30 degrees Celsius have been reported over the summer when the average temperature is normally zero. Yamal has been suffering from extreme heat waves. Giant sinkholes, which might be related to the melting permafrost, have also sprung up in recent years. The region made international news in 2016, when tens of thousands of reindeer were culled after an outbreak of anthrax that had been released from melting permafrost and had infected many of the herds.[65] These threats are further exacerbated by the oil and gas industry's inordinate emissions of greenhouse gases.

61 Source made available on request: Hydrocarbon Exploration in the onshore and offshore Russian Arctic Offshore: Investment Risks
62 Source made available on request: Hydrocarbon Exploration in the onshore and offshore Russian Arctic Offshore: Investment Risks
63 http://archive.premier.gov.ru/events/news/18713/
64 https://www.washingtonpost.com/weather/2020/06/21/arctic-temperature-record-siberia/
65 https://thebarentsobserver.com/en/arctic/2016/08/scientist-yamal-anthrax-outbreak-could-just-be-beginning

Nord Stream & Nord Stream 2 landing point in Lubmin, Germany. © Shutterstock_MarenWinter

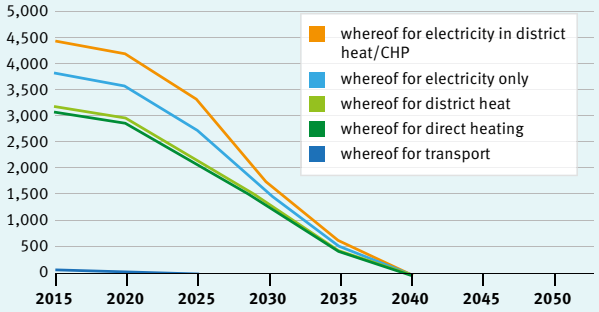
FAQ: Unpacking the industry's lies about the need for Nord Stream 2

Is gas needed to reach the Paris goals?

No. Fossil gas emits abundant volumes of carbon dioxide when combusted and is associated with considerable leakage of its main component, methane – a very potent greenhouse gas[66] - all along the supply chain.

To retain a chance of staying below 1.5°C, all fossil fuels must be phased out in the next 2-3 decades.[67] In OECD countries this transition must be managed faster than in the rest of the world. The CO_2-equivalent budget for the EU is extremely tight. It requires zero emissions well before 2040 to ensure a certain degree of probability of staying below 1.5°C. A recent EU-wide Paris Agreement Compatible (PAC) energy scenario concluded that gas needs to largely be phased out in the EU by 2035.[68] However, most new gas projects are constructed under the assumption that their lifetimes will extend far beyond this date.

Fossil gas: Primary energy supply EU28 [TWh]



PAC scenario demonstrating that fossil gas can be largely phased out by 2035 in the EU.
Source: https://caneurope.org/content/uploads/2020/06/PAC_scenario_technical_summary_29jun20.pdf

Can fossil gas be decarbonised?

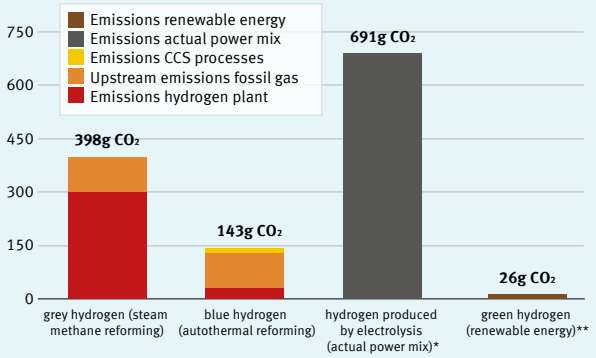
The idea of decarbonising fossil gas by coupling it with Carbon Capture and Storage (CCS) technologies is illusive at best. These immensely costly technologies are not proven to function on a larger scale. Part of the CO_2 to be captured still escapes into the atmosphere. There is no indication that CCS will be technically and economically available in the foreseeable future.[69] Such theoretical technologies also fail to account for the climate impacts of substantial methane emissions that unavoidably occur throughout the lifecycle of fossil gas.

Can't fossil gas be easily turned into hydrogen?

Any form of hydrogen production that takes fossil gas as a feedstock comes with a high carbon footprint. In addition to the lifetime methane emissions of fossil gas, CO_2 is released when splitting off hydrogen from methane. In

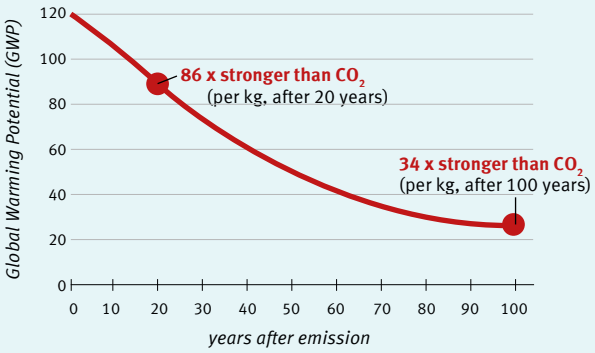
66 www.priceofoil.org/2019/05/30/gas-is-not-a-bridge-fuel/
67 www.productiongap.org/2020report/
68 www.caneurope.org/building-a-paris-agreement-compatible-pac-energy-scenario/
69 www.ciel.org/wp-content/uploads/2019/02/CIEL_FUEL-TO-THE-FIRE_How-Geoengineering-Threatens-to-Entrench-Fossil-Fuels-and-Accelerate-the-Climate-Crisis_February-2019.pdf

Emissions hydrogen production: g CO_2 per kWh H2



Source: Greenpeace Energy, KURZSTUDIE BLAUER WASSERSTOFF, 2020
** German electricity mix in 2018*
*** including emissions from construction and installation of renewable energy facilities*

Climate effect of methane after 20 and 100 years



Source: www.ipcc.ch/report/ar5/wg1/ page 714 (table 8.7) and 731 (table 8.A.1)

the production of blue hydrogen, these emissions would be captured with CCS technologies. However, since CCS is not available at scale, it is unrealistic that blue hydrogen can play a significant role in the near future. Only green hydrogen, which is produced using renewable energy for the electrolysis of water, comes with very low emissions. Due to the unavoidable conversion inefficiencies in its production, green hydrogen will remain a niche solution, dedicated for energy-intensive industry processes which are hard to decarbonise.

What makes methane emissions so problematic?

Over a 20-year period, methane is 86 times more potent than CO_2. As methane decays to CO_2 in the atmosphere, it is still at least 28 times as potent as CO_2 over a 100-year timespan. As only a few years remain to decarbonise the economy and avoid climate tipping points, the shorter term impacts of methane are of utmost concern.[70]

Fossil gas, which consists of 75-100% methane, has been shown to consistently leak into the atmosphere during its production, refining, transport, compressing, decompressing, and its use in power plants and households.[71] When these leakages exceed 2.4 - 3.2% of total production, fossil gas has a worse climate footprint than coal.[72]

A growing body of scientific research has led to a deeper understanding of the scale of the problem. While these studies vary widely in their estimates, ranging from 2-9% leakage rates at production sites, they generally correct industry and government-reporting upwards. Recent measurements show that atmospheric methane levels doubled between 2007 and 2018, largely due to high increase of gas extraction in the US.[73]

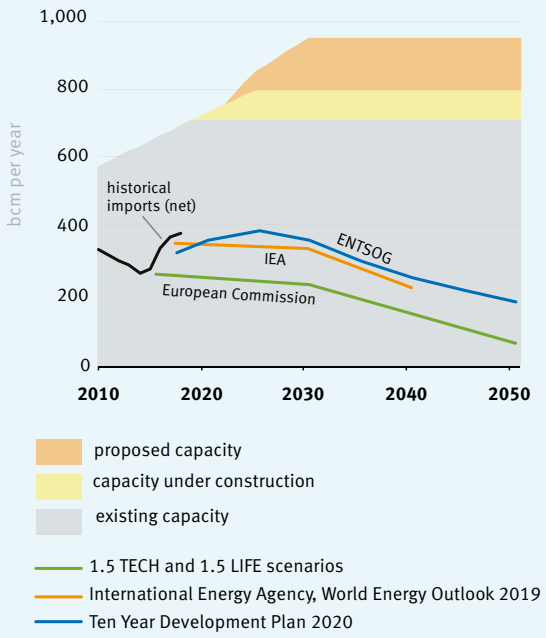
Gas flaring at a production site in the Yamal region. ©Shutterstock_AlexeyAlexandrov

Isn't gas a "bridge fuel" that is needed for the energy transition?

The carbon budget is too tight to allow the establishment of a new fossil gas energy infrastructure before switching to renewables.[74] There is no need for additional gas infrastructure to cover declining gas demands or balance out fluctuations in a renewables-based energy system. In many countries, utility scale batteries can already compete with gas plants to balance out the spikes and dents associated with renewable energy production.[75] To com-

70 www.duh.de/projekte/gas/
71 www.duh.de/fileadmin/user_upload/download/Projektinformation/Energiewende/FAQ_Methanemissionen_EN.pdf
72 www.duh.de/fileadmin/user_upload/download/Projektinformation/Energiewende/FAQ_Methanemissionen_EN.pdf
73 www.diw.de/documents/publikationen/73/diw_01.c.798191.de/dp1892.pdf, p.11
74 www.priceofoil.org/2019/05/30/gas-is-not-a-bridge-fuel/
75 www.priceofoil.org/2019/05/30/gas-is-not-a-bridge-fuel/

EU natural gas imports and import capacity



Source: www.globalenergymonitor.org/wp-content/uploads/2020/02/Gas_at_a_Crossroads_EU.pdf, p.9

plete the energy transition quickly, these technologies must be coupled with energy market modernisations and improvements in the grids. The energy transition must not be slowed down by constructing new fossil fuel- based power plants.

Don't we need the gas from Nord Stream 2 to meet Germany's and the EU's gas needs?

No. Current fossil gas supplies are sufficient and they are secure. The current demand in Germany and Europe is covered by a well-developed gas infrastructure with import capacities well exceeding actual demand. Even according to scenarios used by the EU Commission and the European Network of Transmission System Operators for Gas (ENTSOG), European gas demand is going to decline in the coming years (see graph above). The gap between gas transport capacities and gas needs is therefore going to widen even further.

The European gas import infrastructure is also already sufficiently diversified and secured against sudden supply disruptions or demand increases, for example in the case of an exceptionally harsh winter.[76] Imports from alternative routes from Russia or other countries could be increased in such events, as many pipelines and most LNG-terminals run well below capacity.

The recent hype around LNG comes with its own problems. Find an in-depth analysis in Urgewald's report "Taking the Next Steps - Why insurers should not support new gas infrastructure, starting with LNG". *https://urgewald.org/sites/default/files/media-files/urgewald_LNG_report.pdf*

Is there a risk of Nord Stream 2 becoming a stranded asset?

The German Institute for Economic Research (DIW) calls Nord Stream 2 a "very likely candidate for stranded assets", referring to external and in-house analyses.[77] The gas demand projections currently used by proponents to argue for the profitability of Nord Stream 2 are unrealistically high. Even by the estimates of the EU Commission[78], gas consumption would need to be phased out in the EU in the next 30 years, rendering all investments in additional transport capacities a waste of money.[79] This applies to Nord Stream 2, which would have an expected lifespan of 50 years, as well as to the other gas pipeline projects that are currently being developed on the continent.[80]

Could Nord Stream 2 be used to transport green hydrogen?

Technically, Nord Stream 2 could transport up to 70% hydrogen mixed with fossil gas.[81] Realistically, this is not going to happen, as Russia has neither existing, nor prospective renewable energy capacities to produce green hydrogen at scale. Even if Russia were able to create the necessary infrastructure, there is no point in delivering this gas to Germany under high energy losses, while Russia could use this green hydrogen to replace its own fossil gas capacities.

76 www.artelys.com/wp-content/uploads/2020/01/Artelys-GasSecurityOfSupply-UpdatedAnalysis.pdf
77 www.diw.de/documents/publikationen/73/diw_01.c.798191.de/dp1892.pdf
78 https://ec.europa.eu/clima/sites/clima/files/strategies/2050/docs/long-term_analysis_in_depth_analysis_figures_20190722_en.pdf
79 https://www.globalwitness.org/en/campaigns/fossil-gas/eu-companies-burn-fossil-gas-and-taxpayer-cash/
80 https://energymonitor.ai/policy/us-russia-gas-battle-is-building-stranded-assets-in-europe
81 https://globalenergyprize.org/en/2020/12/10/nord-stream-2-can-send-mixture-of-natural-gas-and-hydrogen-german-official/

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Most of the costs for this project were borne by our donors and supporting members. Without your support, this publication – from research to printing – would not have been possible. Thank you!

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Donation account
IBAN: DE 85 4306 0967 4035 2959 00
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Published by:
urgewald e.V.
Von Galen Straße 4
D-48336 Sassenberg
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Editing: Jacey and Celia Bingler

Thanks to the following for reviewing and helping to bring this paper together:
Nils Bartsch, Sascha Boden, Vladimir Chuprov, Olga Petrova, Johannes Rohr, Sebastian Rötters and Heffa Schücking.

Published in April 2021

Layout: Adrienne Rusch / dieprojektoren.de