

# GERMANY

## KEY FACTS:

- Biggest gas consumer in Europe
- Between 2006 and 2014, gas demand dropped significantly but rose again steeply after that until 2017
- Increasing dependence on Russian gas
- The country has an import capacity almost 4 times higher than what it consumes.
- Germany has the 4<sup>th</sup> biggest gas storage facilities in the world and the biggest in Europe.
- Still has major plans to develop its gas infrastructures, including the highly controversial Nord Stream 2 and new LNG terminals

## 1. GAS DEMAND

According to EU data:<sup>1</sup>

- Gas represented around 21% of Germany's energy mix in 2015<sup>2</sup>
- Germany consumed 85.2bcm of gas in 2016, and about 90bcm in 2017
- Between 2006 and 2014, gas demand dropped significantly but rose again steeply after that until (at least) 2017<sup>3</sup>

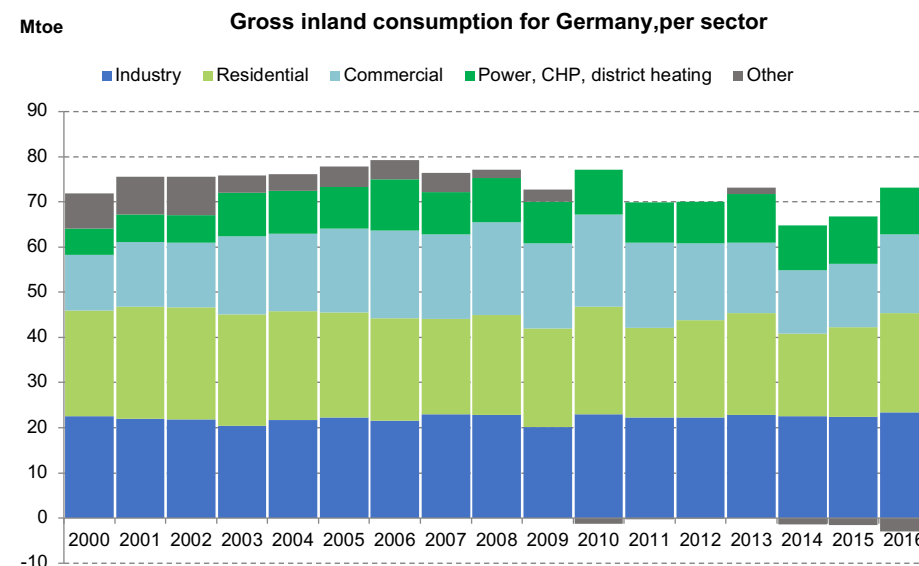
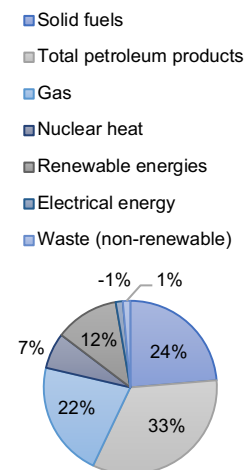


Figure 1: Germany 2016 Energy Mix



## 2. GAS SUPPLY

Germany is an important gas producer in Europe, however, its yearly production only represents a fraction of domestic consumption; in 2018 it covered only about 7% of Germany's consumption.<sup>4</sup> The **production has been in continuous decline in recent years [status 2018]**. According to Eurostat data, the country's fossil gas production in 2016 was 7.9bcm,<sup>5</sup> down from around 13.6bcm in 2010 and 19.80bcm in 2005.<sup>6,7</sup> According to government estimates, domestic production is **expected to decline by an average of 5% per year in the coming years.**<sup>8</sup>

<sup>1</sup> E3G compilation of data extracted from Eurostat

<sup>2</sup> <http://www.bmwi.de/BMWi/Redaktion/PDF/E/energiestatistiken-grafiken.property=pdf.bereich=bmwi2012.sprache=de.rwb=true.pdf>

<sup>3</sup> <https://www.bloomberg.com/news/articles/2019-02-28/germany-natural-gas-demand-set-to-soar-as-coal-plants-close>

<sup>4</sup> <https://www.cleanenergywire.org/news/germanys-oil-and-gas-production-slides-2018>

<sup>5</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg\\_cb\\_gas&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_cb_gas&lang=en)

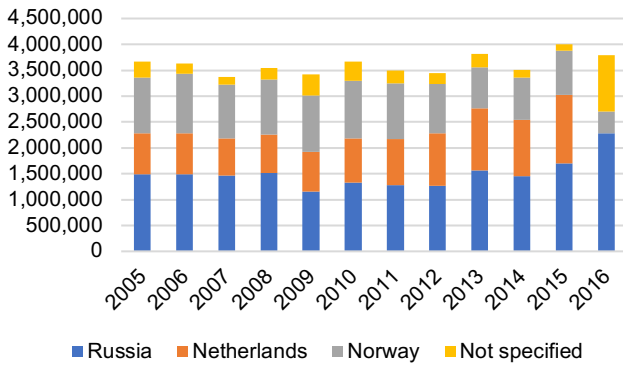
<sup>6</sup> Yearly report 2010, German gas consumption and production: [Erdöl und Erdgas in der Bundesrepublik Deutschland 2010 - Download \(PDF, 3,75 MB\)](#)

<sup>7</sup> Yearly report 2005, German gas consumption and production: [Erdöl und Erdgas in der Bundesrepublik Deutschland 2005 - Download \(PDF, 5,00 MB\)](#)

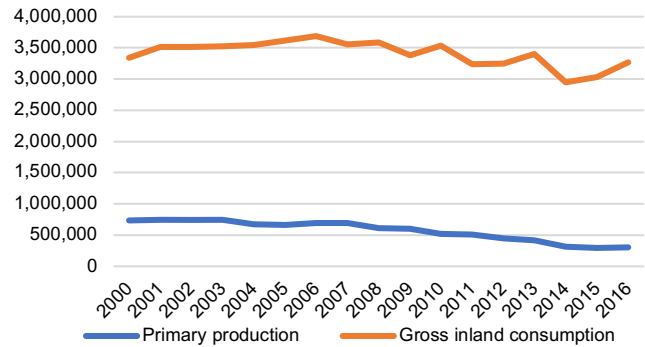
<sup>8</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg\\_cb\\_gas&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_cb_gas&lang=en)

<sup>8</sup> [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_Germany.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Germany.pdf)

Germany - Gas Suppliers (in TJ GCV)



Germany - Production vs. Demand (in TJ GCV)



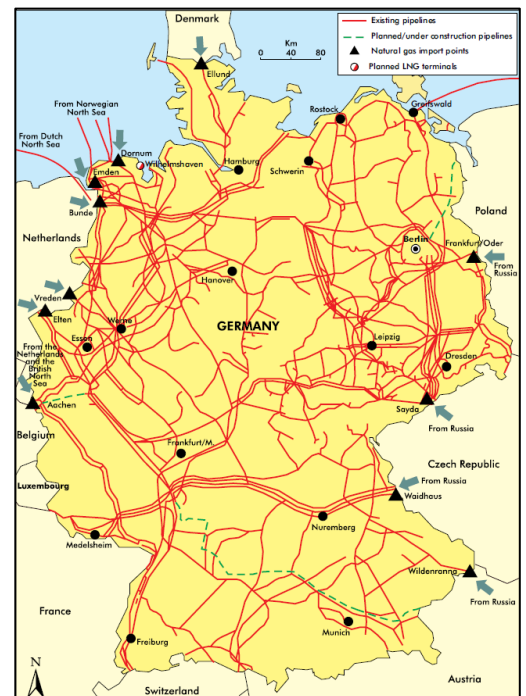
The rest of Germany’s fossil gas demand is therefore met through imports. Specifically, Germany’s dependence on Russian gas has significantly increased in the past years. Due to decreasing indigenous production and declining gas production in the Netherlands and the resulting switch from L-gas to H-gas supply in north-west Germany<sup>9</sup> the share of Russian gas is set to grow further. Following data from the German Federal Office for Economic Affairs and Export control, the share of imports from Russia to Germany lay at about 35% in 2015.<sup>10</sup> In 2017, 52% of the gas Germany imported came from Russia, and only ~9% from Norway.<sup>11</sup> In the same year, Germany was the biggest buyer of Russian gas, making up 27.5% of Gazprom’s total exports.<sup>12</sup>

The desire to reduce dependency on Russian gas by creating LNG import facilities is largely questioned by actors of the sector. According to a BP economist “in terms of pure economics, pipeline gas should win hands down... particularly Russia has very large reserves and very low-cost gas. And it has very big pipelines going to Europe. It has a huge competitive advantage relative to imports of LNG from anywhere else in the world”.<sup>13</sup> On the other hand, Russia started exporting LNG from the Yamal peninsula<sup>14</sup> and might ultimately also supply German LNG terminals.

The estimations concerning future gas demand in Germany differ considerably, in particular the gas industry expect a rise in the next years due to the coal and nuclear phase out,<sup>15</sup> while on the other hand, developments concerning battery storage and the decreasing cost of renewables indicate that a gas boom may never happen in Germany.<sup>16</sup>

### 3. GAS INFRASTRUCTURE

Fossil gas is imported to Germany exclusively by cross-border pipelines. Because of its comprehensive cross-border pipeline infrastructure and its central location within Europe, Germany has become **the main gas transit hub in Europe**, with significant amounts of gas from Russia and Norway transiting the country for delivery to other markets. Germany has a gas import capacity of **54bcm/y from Norway** (via three pipelines), **208bcm/y from Russia** (via 3 pipelines: North Stream, Yamal and the Ukraine pipeline system),<sup>17</sup> and **some 25bcm/y from the Netherlands** (via four main pipelines and interconnection points), and **gas storage capacities of 24.6bcm** (via 51 gas



<sup>9</sup> <https://energytransition.org/2017/03/germany-runs-out-of-dutch-gas/>

<sup>10</sup> [https://www.bafa.de/SharedDocs/Downloads/DE/Energie/egas\\_entwicklung\\_1991.xls?\\_blob=publicationFile&v=1](https://www.bafa.de/SharedDocs/Downloads/DE/Energie/egas_entwicklung_1991.xls?_blob=publicationFile&v=1) on this website there is no detailed data after 2015 due to “data protection reasons”.

<sup>11</sup> <https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html>

<sup>12</sup> <https://www.forbes.com/sites/davekeating/2018/07/19/how-dependent-is-germany-on-russian-gas/-e0a52be3b489>

<sup>13</sup> <https://www.euractiv.com/section/energy/news/europe-grapples-with-dutch-gas-production-collapse/>

<sup>14</sup> <https://energypost.eu/russia-starts-lng-exports-from-yamal-what-it-means-for-europe/>

<sup>15</sup> <https://www.bloomberg.com/news/articles/2019-02-28/germany-natural-gas-demand-set-to-soar-as-coal-plants-close>

<sup>16</sup> <https://www.bloomberg.com/news/articles/2019-02-06/germany-may-never-get-a-natural-gas-boom-even-with-coal-exit>

<sup>17</sup> [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_Germany.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Germany.pdf)

storage facilities), Germany can import and store more than three times the gas than it consumes.<sup>18</sup>

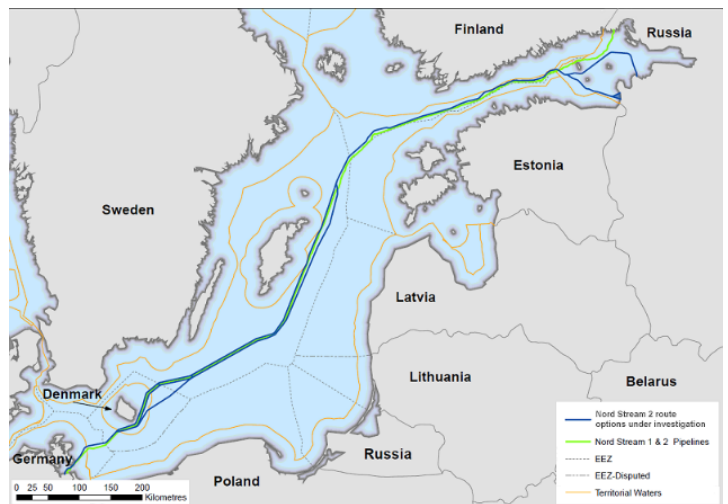
According to the German Economy Ministry, **Germany's gas storage facilities are the 4<sup>th</sup> biggest in the world and the biggest in Europe.**<sup>19</sup> In October 2015 BASF/Wintershall and Gazprom have completed – with the approval of the EU Commission – a swap of assets including the transmission of shares for Gazprom in the gas storage facilities in Rehden and Jemgum, Germany as well as Haidach, Austria.<sup>20</sup> This deal increases Germany's and Europe's dependence on Russia and it questions the European Commission's diversification policy of gas suppliers to allegedly reduce dependence on Russia.

Nonetheless, despite the existence of an extremely dense web of gas connections, allowing Germany to more than exceed its needs and those of its neighbours, the country is currently debating the building of new massive gas infrastructures, several of them with a PCI status.

While the country has no liquefied natural gas (LNG) infrastructure, some German companies, encouraged by federal authorities, have booked capacities in other European LNG terminals, e.g. E.ON Ruhrgas has contracted 3bcm/y Dutch GATE LNG terminal. Similarly, discussions to build up to 4 LNG terminals in Germany have become louder in the past years. The most advanced LNG project is a planned terminal in Brunsbüttel, for which RWE has already secured potential capacities in September 2018, but also locations in Stade or Wilhelmshaven are discussed.<sup>21</sup> Opposition against these LNG terminals is growing in Germany and the construction is rejected due to climate, environmental and safety<sup>22</sup> concerns.

### Nord Stream II (non –PCI)<sup>23</sup>

With the existing Nord Stream pipeline, Gazprom is able to bring Russian gas directly to Germany through the Baltic Sea, allowing Moscow to bypass European transit countries such as Poland, Belarus, and crisis-hit Ukraine. Germany and Gazprom are however now heavily pushing in favour of the construction of a second pipeline, Nord Stream II, which would **double the pipeline's current capacity, from 55 to 110bcm/y.** The project might start operating by the end of 2019 and costs ~€11billion.<sup>24</sup>



The project is however extremely controversial and at the source of an intense political debate and strong tensions with Eastern European countries: as 75% of total gas consumed in Europe is consumed in only 6 Western European countries (DE, FR, IT, NL, SP and UK), Gazprom/Russia could use this new project to bypass once and for all the much smaller Eastern European gas market. That's why governments from the region believe the project poses "*risks for energy security in the region of Central and Eastern Europe, which is still highly dependent on a single source of energy*"<sup>25</sup> and why the European Commission supported this concern, arguing that "*if constructed, it would not only increase Europe's dependence on one supplier, but it will also increase Europe's dependence on one route*" (Miguel Arias Cañete)<sup>26</sup> and that it "*could alter the landscape of the EU's gas market while not giving access to a new source of supply or a new supplier, and further increasing excess capacity from Russia to the EU*" (Maros Šefčovič).<sup>27</sup>

US president Trump also repeatedly used sanctions to threaten in case the project moves forward.<sup>28</sup> In return, the planned LNG projects could also be seen as a way of pleasing the US, then able to supply Germany with fracked gas. In connection with the LNG terminals, German economy minister Altmaier

<sup>18</sup> [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_Germany.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Germany.pdf)  
& [http://www.entsog.eu/public/uploads/files/maps/transmissioncapacity/2016/ENTSOG\\_CAP\\_MAY2016\\_A0FORMAT.pdf](http://www.entsog.eu/public/uploads/files/maps/transmissioncapacity/2016/ENTSOG_CAP_MAY2016_A0FORMAT.pdf)

<sup>19</sup> <https://www.bmwi.de/DE/Themen/Energie/Konventionelle-Energietraeger/gas.html>

<sup>20</sup> <https://www.bmwi.de/Redaktion/DE/Dossier/konventionelle-energietraeger.html>

<sup>21</sup> [http://europa.eu/rapid/press-release\\_IP-13-1207\\_en.htm](http://europa.eu/rapid/press-release_IP-13-1207_en.htm)

<sup>22</sup> <https://www.en-former.com/en/lng-terminal-germany/>

<sup>23</sup> <https://www.ndr.de/nachrichten/schleswig-holstein/Umwelthilfe-schliesst-LNG-Terminal-in-Brunsbuettel-aus.lng164.html>

<sup>24</sup> <https://www.nord-stream2.com/>

<sup>25</sup> <https://www.euractiv.com/section/energy/news/nord-stream-2-eu-heading-towards-legal-arbitration/>

<sup>26</sup> <http://energypost.eu/can-nord-stream-2-stopped/>

<sup>27</sup> [http://europa.eu/rapid/press-release\\_SPEECH-15-5797\\_en.pdf](http://europa.eu/rapid/press-release_SPEECH-15-5797_en.pdf)

<sup>28</sup> [http://europa.eu/rapid/press-release\\_SPEECH-16-1283\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-16-1283_en.htm)

<sup>29</sup> <https://www.dw.com/en/nord-stream-2-builders-forge-ahead-despite-renewed-us-sanctions-threat/a-49186907-0>

spoke of “a gesture to our American friends”.<sup>29</sup>

The EU is not directly involved in the decision-making process around Nord Stream 2: it is the national permitting authorities of the countries whose waters the pipeline will cross that must grant approval for the project (RU, FI, SE, DK and DE) and the project is led by a consortium of private companies (Gazprom, Eon, Shell, OMV, BASF/Wintershall and Engie)<sup>30</sup> who would not seek EU financial support. However, in July 2019 the last country to withhold permission for the pipeline to run through its waters, was Denmark, and a solution (e.g. rerouting) will need to be found before the project can be finalized.<sup>31</sup>

However, the EU-Commission tabled an amendment to the EU Gas Directive in 2017, obviously designed to stop NS II, sparking also numerous discussions on EU-level.<sup>32</sup>

The project comes with serious problems that should disprove its necessity:

- First, Germany already has 208bcm/y of capacity to import gas from Russia. Nord Stream 2 would add even more excess capacity which will neither help Germany and Western European countries to improve their energy security (Russia remains an unreliable geopolitical partner) nor further diversify its gas supplies. Especially in a context of structural gas demand decline. As Commissioner Sefcovic said in January 2017, “*even during this harsh winter, we are using the energy infrastructure to transport gas between Russia and Europe at 60%.*”<sup>33</sup> However, in October 2016, the European Commission authorised Gazprom to use 80-90% of the Opal pipeline's 35bcm/y capacity, up from the previous 50% limit<sup>34</sup> (see map) further expanding the excess capacity for gas import from Russia.<sup>35</sup>
- Under the Third Energy Package, the owners of major gas pipelines must be independent of the suppliers of gas and must allow equal access to all suppliers who want to make use of the pipeline. Nord Stream 2 clearly does not conform to these requirements: it is 50% owned by Gazprom, which is a supplier, and also partly by companies like Shell, OMV and Engie, plus other suppliers.<sup>36</sup>

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<sup>29</sup> <https://www.reuters.com/article/us-eu-energy-usa-russia/germany-to-build-lng-plant-in-gesture-to-u-s-drive-to-sell-more-idUSKCN1LY25H>

<sup>30</sup> <http://energypost.eu/can-nord-stream-2-stopped/>

<sup>31</sup> <https://www.neweurope.eu/article/nord-stream-2-pulls-plug-on-danish-route-for-russian-gas/>

<sup>32</sup> <https://www.euractiv.com/section/energy/news/nord-stream-2-eu-heading-towards-legal-arbitration/>

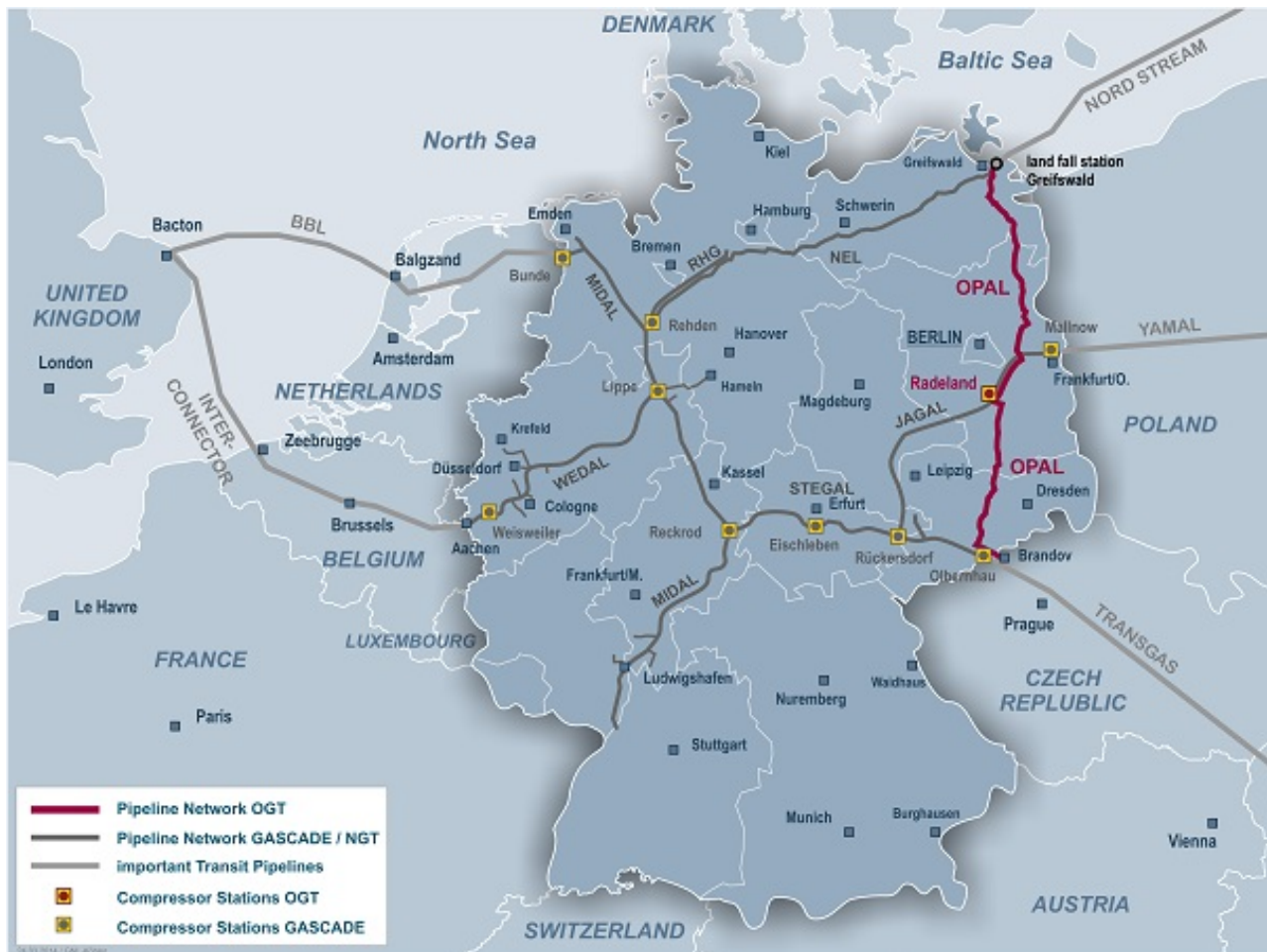
<sup>33</sup> <http://www.euractiv.com/section/energy/interview/sefcovic-everybody-wants-to-be-in-good-terms-with-us/>

<sup>34</sup> <http://www.euractiv.com/section/energy/news/gazprom-gets-greater-access-to-germanys-opal-gas-pipeline/>

<sup>35</sup> Poland appealed against this decision, which temporarily suspended the capacity extension (<http://www.reuters.com/article/us-gazprom-europe-gas-idUSKBN15G3ZZ>)

<sup>36</sup> <http://energypost.eu/can-nord-stream-2-stopped/>

- All in all, this project would further lock Germany (the only EU State's promoter of the project) into fossil fuel dependence at a time when it's struggling to phase-out its coal reliance. Replacing one fossil fuel with another will not help achieve decarbonisation of the German economy and represents a serious obstacle to a more ambitious and faster Energiewende.



### New LNG infrastructures (non-PCIs) :

Germany is also planning to develop at least one new LNG terminal:

- The plans are most advanced for the terminal in Brunsbüttel in the greater Hamburg area: it would have a throughput capacity of about 5bcm per year and have access to the German gas grid.<sup>37</sup> Prime Minister of Schleswig-Holstein and the Mayor of Hamburg have already announced their support for this €400-450 million project and committed to contribute €40 million.<sup>38</sup> The gas imported might also be used by Yara, one of the “Exxons of Agriculture” located close by, to produce fertilizer and is very likely to import fracked US gas. The promoter expects construction to start in 2020 and the terminal might start operating by 2023.<sup>39</sup> This “German LNG Terminal” is planned to be built by Dutch Vopak LNG Holding B.V. and Gasunie as well as German Oiltanking GmbH.
- Also, in the state of Lower Saxony, Stade LNG terminal might be built. Fracking proppants provider Dow Chemical wants to see this project built on its factory site and is looking for ways of enabling LNG imports as soon as possible.<sup>40</sup> The terminal is often referred to as “LNG terminal to import US gas” which would mean that the climate impacts of this project could be even worse.
- In Wilhelmshaven (the terminal would have a 10bcm/y capacity and some gas storage capacity of 160,000 m<sup>3</sup> <sup>41</sup>) and Rostock, LNG terminals might also be subject to discussions again

These projects clearly illustrate the confusing strategy that Germany has regarding gas, energy security and diversification. German authorities strongly defend their LNG plans and the building of Nord Stream II, by arguing that the country's growing dependence on Russian gas is problematic and that they should find new sources of supply. However, the country is already very well supplied, has many opportunities to

<sup>37</sup> <https://www.vopak.com/german-lng-terminal>

<sup>38</sup> <http://www.in-online.de/Nachrichten/Politik/Politik-im-Norden/Scholz-und-Albig-loben-gute-Kooperation-Opposition-Wahlkampf>

<sup>39</sup> <https://germanlng.com/timing/>

<sup>40</sup> [https://www.ndr.de/nachrichten/niedersachsen/lueneburg\\_heide\\_unterelbe/Stade-Erste-LNG-Lieferung-schon-2021,aktuellueneburg1238.html](https://www.ndr.de/nachrichten/niedersachsen/lueneburg_heide_unterelbe/Stade-Erste-LNG-Lieferung-schon-2021,aktuellueneburg1238.html)

<sup>41</sup> <http://www.dftg.de/en/profil/default.htm> & <http://www.dftg.de/en/projekt/terminalKonzept.htm>

diversify its supplies through connections to grids giving it access to many other sources (through pipelines with e.g. the Netherlands or Poland it also already has access to LNG). Investing more in the LNG sector does not seem like a constructive way to combat this challenge, especially regarding the very low utilization rate and therefore questionable economic viability of the existing European LNG terminals.<sup>42</sup> In the period between January 2012 and March 2019, the daily average utilization rate of all existing EU LNG terminals was at roughly 23%.<sup>43</sup>

There are also more gas infrastructure projects planned in Germany, many directly or indirectly linked to the new import projects (LNG terminals and Nord Stream 2), for example the EUGAL pipeline crossing Eastern Germany from North (Greifswald) to South (Czech Republic).<sup>44</sup>



#### CONTRIBUTING AUTHORS (2019)

Antoine Simon, *Friends of the Earth Europe*  
Frida Kieninger, *Food & Water Europe*, [fkieninger@fweurope.org](mailto:fkieninger@fweurope.org)  
Andy Gheorghiu, *Food & Water Europe*, [agheorghiu@fweurope.org](mailto:agheorghiu@fweurope.org)  
Noëlie Audi-Dor, *Gastivists*  
Nessim Achouche, *Food & Water Europe*  
Eilidh Robb, *Food & Water Europe*



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<sup>42</sup> [http://www.lngworldnews.com/interview-european-lng-terminal-owners-looking-for-new-ways-to-boost-utilization/?utm\\_source=email&utm\\_medium=email&utm\\_campaign=daily-update-lng-world-news-2017-03-16&uid=52896](http://www.lngworldnews.com/interview-european-lng-terminal-owners-looking-for-new-ways-to-boost-utilization/?utm_source=email&utm_medium=email&utm_campaign=daily-update-lng-world-news-2017-03-16&uid=52896)

<sup>43</sup> Own calculations based on GSIE data. Link: <https://alsi.gie.eu/#/>

<sup>44</sup> [https://www.eugal.de/fileadmin/downloads\\_eugal/factsheets/EUGAL\\_Factsheet\\_en\\_181206.pdf](https://www.eugal.de/fileadmin/downloads_eugal/factsheets/EUGAL_Factsheet_en_181206.pdf)