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LNG Projects Are a Bad Deal for Germans and Americans

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This report is a collaboration between Environmental Action Germany (Deutsche Umwelthilfe e.V. - DUH), a nongovernmental environmental and consumer protection organization in Germany founded in 1975, and the Center for American Progress, an independent, nonpartisan policy institute in the United States founded in 2003.

Introduction and summary

The newly elected German government faces important choices in securing its energy future and sovereignty. Germany is dependent on imports to cover 95 percent of its fossil gas demand.[1] The Russian invasion of Ukraine reminded Europeans of the hazards of relying on Russian gas and "the risks of blackmail, economic coercion and price shocks," as summarized by European Commission President Ursula von der Leyen.[2] The newly unveiled REPowerEU road map is designed to ensure "full energy independence from Russia," pool gas demand and procurement, and accelerate renewable energy deployment and the clean energy transition.[3] However, U.S. President Donald Trump is trying to leverage the recent expansion in U.S. gas export capacity and promote fossil fuel interests to demand that Europeans buy more fossil imports from the United States, without regard for Germany's or the European Union's forecasted gas demand and energy transition plans.[4]

President Trump's actions toward Europe show that ending fossil fuel influence and maintaining sovereignty require broader strategy than solely ending Russian energy imports. As Chancellor of Germany Friedrich Merz himself said in February: "My absolute priority will be to strengthen Europe as quickly as possible so that, step by step, we can really achieve independence from the USA … it is clear that the Americans, at least this part of the Americans, this administration, are largely indifferent to the fate of Europe."[5] Chancellor Merz was speaking about the risks of relying on American military security guarantees, but the same logic applies to energy security.

Undoubtedly, the current German government faces a difficult energy security situation—one the far right has exploited to grow its political base amid soaring energy costs that have weighed heavily on the German economy since Russia's full-scale invasion of Ukraine and the abrupt end of cheap Russian gas. To meet immediate energy needs and offer a credible political alternative, the government may have no choice but to rely on U.S. LNG in the short term. However, Germany must use this period to accelerate the development of renewable energy, energy efficiency, and energy storage solutions; modernize its electricity grid; and expand domestic clean energy capacity. Without these investments, LNG reliance risks locking the country into long-term fossil fuel dependence and continued economic vulnerability.

While Germany has made important steps to end its reliance on Russia for energy needs, dependence on the United States for volatile fossil fuel imports that emit more greenhouse gases than coal is not Germany's only or best option.

Importing U.S. LNG is expensive, disruptive to the climate, and risky to national security. Germany should not copy the U.S. playbook on natural gas, nor should it be beholden to the U.S. political and corporate interests pushing LNG on Germany. The EU is likely to reach peak LNG demand in 2025,[6] and recent studies show it will have a fossil gas supply glut when accounting for the EU's current suppliers, own production, and existing contracts. Future energy needs can be met with cleaner and more affordable energy solutions, which are the more responsible choice for protecting all consumers and households from rising energy costs, preserving German energy independence, decreasing local pollution, and mitigating the climate crisis. Germany's thriving clean tech businesses, innovators, and workforce are ready to meet the challenges ahead.

Fossil gas remains a risky and costly option, and long-term reliance on U.S. LNG is out of line with Germany's climate targets and the global climate targets needed to avoid the worst impacts of climate change.[7] Taking into account methane emissions during production and transport, U.S. LNG can have higher emissions than coal.[8] Moreover, expensive long-term LNG contracts lock in high prices, and the import infrastructure LNG requires relies on domestic subsidies in order to be viable. Neither Germany nor the European Union can afford a wave of new, long-term LNG supply agreements.

"Long-term LNG contracts may enrich oil and gas companies, but ordinary citizens—both German and American—will end up paying the price by overpaying for energy."

This report documents both the risks Germany would face by making long-term commitments to purchase unnecessary LNG from the United States and the economic and environmental costs Americans would bear as a result of increasing exports of fossil gas. The final sections identify more affordable, clean, and sustainable ways for Germany to meet its heating, power, and industrial energy needs.

Oil and gas companies tout LNG as a cheap and clean source of energy, but its economic, political, and emission profile is costly for consumers, risky for importing countries' independence, and damaging to public health and the climate. Long-term LNG contracts may enrich oil and gas companies, but ordinary citizens—both German and American—will end up paying the price by overpaying for energy.

Increased LNG imports undermine Germany's economic and energy independence

Global demand and consumption of fossil gas, branded by the industry as "natural gas," has increased almost every year since the 1980s.[9] The United States did not start exporting LNG until 2016, but in less than a decade, it has become the world's largest exporter of liquefied natural gas—fossil gas compressed for transportation over long distances.[10] Shell expects LNG demand to rise 60 percent over the next 15 years, driven largely by demand in China and India.[11]

Germany's gas imports, whether by pipeline or LNG terminals from neighboring countries, peaked in 2019 at 6,042,840 terajoules, dropped precipitously in 2022, and slightly rebounded in 2024.[12] However, compared with average consumption from 2018 to 2021, Germany consumed about 14 percent less natural gas in 2024.[13]

Germany's demand for and consumption of gas is decreasing and the utilization of newly created LNG terminals is low, but the nation plans to further expand the recently created LNG import capacity.[14] During the European energy crises of 2022, the United States rerouted LNG destined for Asian markets to the European Union, including to Germany, to provide emergency support. Over the past 10 years, German banks and technology companies have provided more than $4.4 billion in loans for the construction of LNG export terminals in the United States.[15] Furthermore, bonds amounting to about $675 million were secured.[16] In addition to direct financing of projects, long-term supply contracts have also been signed between U.S. LNG operators and German companies.[17] Most deliveries are scheduled to start in 2026 or 2027 and will run for up to 20 years.[18] Currently, almost all of the LNG imported to Germany already comes from the United States; in 2024, the share was 86 percent.[19]

Now, the Trump administration is looking for buyers of additional LNG from U.S. export terminals, already securing agreements with Bangladesh (nonbinding), India (in negotiation, despite needing to offload LNG from the current contract),[20] Saudi Arabia (20-year contract),[21] and Qatar (to invest in U.S. LNG export terminals).[22] The Qatari investment in U.S. LNG terminals was announced as part of President Trump's visit and economic investment deal with Qatar, from which President Trump was gifted a jet and where the Trump Organization also announced it would be investing $5.5 billion in a golf club in Qatar.[23] Eight U.S. LNG export terminals approved by the first Trump administration to export LNG to countries without a free-trade agreement have yet to start construction, and the U.S. LNG industry is hungry for buyers while facing high costs[24] and competition, especially from Qatar.[25]

Germany does not require new LNG contracts or infrastructure for energy security

American systems scientist Peter Senge wrote, "Today's problems come from yesterday's solutions."[26] This is the case with the rushed expansion of LNG exports from the United States to Germany, during a desperate time in response to the cutoff of Russian gas following its invasion of Ukraine. While Germany undoubtedly faces ongoing concerns around energy security, the energy crisis is definitely over; and now, additional long-term LNG contracts will weaken, rather than strengthen, German energy

security. No new LNG contracts or expansion of LNG import capacity is necessary to secure energy supply going forward.[27] In fact, Germany navigated the Russian gas cutoff rather well, especially through an increase of fossil gas imports via Norway and the Netherlands, energy efficiency, and a fast scale-up of renewable alternatives.[28] Germany can now make decisions that are strategically aligned with its long-term interests.

As a result of the energy crisis, the German government passed the LNG Acceleration Act, "LNG-Beschleunigungsgesetz," to ramp up LNG infrastructure and imports on a large scale. In an unprecedented move, the 2022 law weakened participation rights and canceled environmental impact assessments for floating terminals, known as floating storage and regasification units (FSRUs).[29] The former German government coalition seized on LNG as the primary solution for securing Germany's energy supply. Politicians at the German and European levels are still pushing for new long-term LNG contracts with the United States, with the idea featuring prominently in the EU Affordable Energy action plan[30] and the German government's new coalition treaty.[31]

These emergency measures have proven unnecessary. Significant LNG import capacity only came online when the worst of the crisis was over. Based on the prior record of delayed projects and deliveries due to explosions, hurricanes, and construction delays,[32] as well as looming global oversupply,[33] U.S. LNG contracts may be an unreliable solution to other countries' energy needs.

The German import terminals are likewise facing significant viability issues due to low capacity utilization,[34] needing public subsidies to even be viable.[35] Nine LNG terminals are currently planned in Germany. Despite receiving expedited permits, only four of the six permitted FSRUs are currently operating. (see Figure 1) These four FSRUs went into operation in Brunsbüttel, Mukran, and Wilhelmshaven—where there are two units. Meanwhile, onshore terminals will be added in a second expansion phase in Stade, Wilhelmshaven, and Brunsbüttel; these onshore capacities are scheduled to go into operation in 2027 and 2028.

Many of Germany's liquefied natural gas (LNG) terminals are already not used to their full capacity

Overview of existing LNG terminal projects in Germany, 2025

Use pagination to browse the LNG terminals or search within the table.

Terminal	Location	Current status	Planned duration	Capacity/year (billion cubic meters)	Utilization rate
Deutsche ReGas Floating Storage and Regasification Unit (FSRU) Neptune	2022-2024 in Lubmin, Baltic Sea 2024-present in Mukran, island of Rügen, Baltic Sea	Lubmin approved December 2022 Mukran approved April 2024 Currently operating	2023–2043	6.75 bcm	2023: 11% 2024: 8%
Deutsche Energy Terminal GmbH (DET); FSRU Höegh Gannet	Brunsbüttel, Elbe River estuary	Approved January 2023 Currently operating	2023–2027	7.5 bcm; interim permit decreased capacity to 3.7 bcm	2023: 68% 2024: 47%
DET; FSRU Höegh Esperanza	Wilhelmshaven, North Sea	Approved December 2022 Currently operating	2022–2032	7.5 bcm	2023: 81% 2024: 64%
Deutsche ReGas, FSRU Energos Power	Mukran, island of Rügen, Baltic Sea	Approved April 2024 Operated until February 2025 Stopped due to operation dispute*	2024–2043	6.75 bcm	2024: 8%
DET; FSRU Excelerate Excelsior	Wilhelmshaven, North Sea	Approved in Q1 2024 Currently operating	2025–2028	7.5 bcm	N/A
DET; FSRU Energos Force	Stade, Elbe River	Approved December 2023 Not operating	2025–2027	7.5 bcm	Not utilized
Hanseatic Energy Hub GmbH (land-based LNG terminal)	Stade, Elbe River	Approved November 2023 Not operating	2027–2043	12 bcm	Not utilized
German LNG Terminal GmbH (land-based LNG terminal)	Brunsbüttel, Elbe River estuary	Not yet approved	2027–2043	10 bcm	Not utilized
Tree Energy Solutions (land-based LNG terminal)	Wilhelmshaven, North Sea	No documents for application process yet	2028–2043	14.8 bcm	Not utilized

** Following the termination of the contract by Deutsche ReGas, the Energos Power terminal was handed over to the Egyptian Natural Gas Holding Company (EGAS) and is now being used in the Suez Canal region in Egypt.*

Note: The Federal Ministry for Economic Affairs and Climate Action of Germany (BMWK) plans to shut down some FSRUs when onshore terminals are operational. Exemptions have been given for one FSRU in Wilhelmshaven and two FSRUs in Mukran.

Source: Federal Ministry for Economic Affairs and Climate Protection, "Report by the Federal Ministry for Economic Affairs and Climate Protection on the planning and capacities of floating and fixed liquefied natural gas terminals" (Berlin, Germany: 2023); Gas Infrastructure Europe Aggregated LNG System Inventory, "LNG Inventory Status" (last accessed April 2025); Coordination Office for Gas and Hydrogen Network Development Planning, "Draft Scenario Framework for the Gas and Hydrogen Network Development Plan 2025" (Berlin, Germany: 2024); Norddeutscher Rundfunk (NDR), "Wilhelmshaven: Second LNG terminal now feeds into the gas grid" (last accessed June 2025).

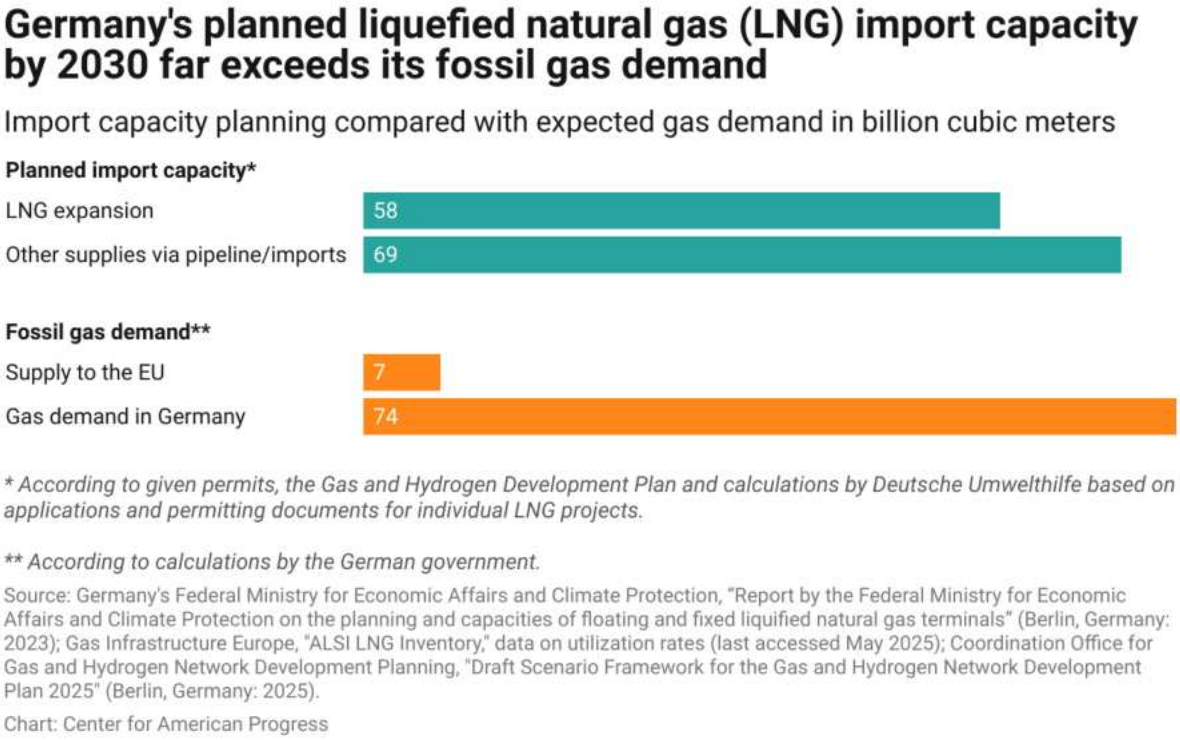
Table: Center for American Progress

Germany's ramp-up of LNG import capacity was designed to meet demand that no longer exists and is expected to continue to decline. As noted earlier, approximately 14 percent less natural gas was consumed in Germany in 2024 compared with average consumption between 2018 and 2021.[36] For 2024, the German government predicted a fossil gas demand of 85 billion cubic meters (bcm).[37] However only a total of 73 bcm, or 844 terawatt hours, of fossil gas were consumed in 2024.[38]

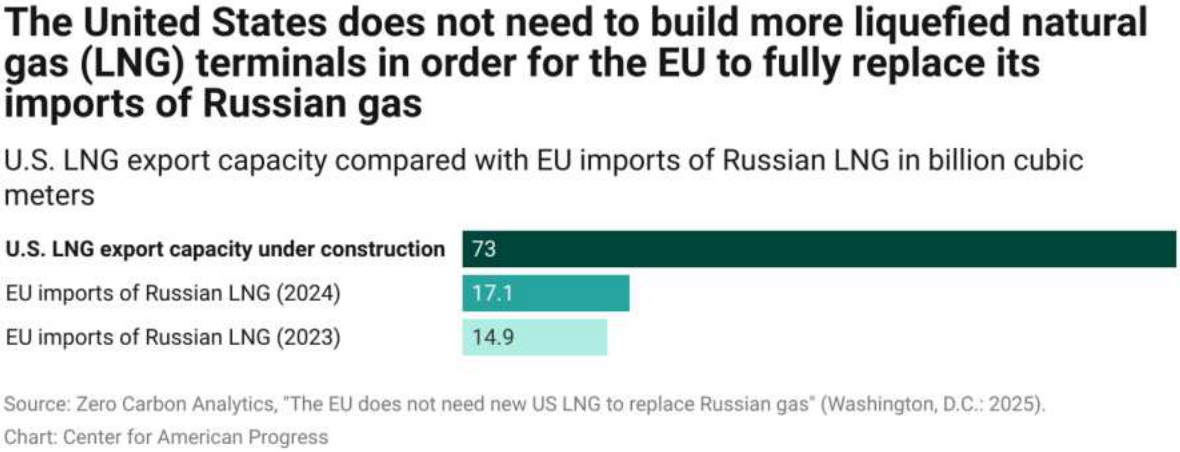
A 2024 meta-study by the Öko-Institut on the major climate neutrality scenarios, including the official scenarios from the Federal Ministry for Economic Affairs and Climate Action, shows that Germany's natural gas consumption will fall by 28 percent to 63 percent by 2035.[39] The EU's gas demand is similarly set to fall rapidly, decreasing 29 percent from 2024 levels by 2030 and 67 percent by 2040, according to the European Commission's impact assessment for the proposed 90 percent emissions reduction target by 2040.[40]

"If all LNG projects were implemented as planned, Germany would have an overcapacity of at least 50 billion cubic meters in 2030."

At approximately 6.9 bcm, the three German LNG terminals currently operating represent a relatively minor portion—roughly 8 percent—of the total gas imports that were fed into the German grid in 2024.[41] However, LNG import capacity currently being planned would increase to about 58 bcm by 2030, well in excess of domestic demand, even as the operating terminals in Germany ran at less than 50 percent average capacity in 2024 due to low demand. Together with already existing imports via pipelines and neighboring terminals of around 69 bcm—including from Norway, the Netherlands, and Belgium—Germany is rushing to increase its fossil gas import capacity to 127 bcm in 2030,[42] although even conservative estimates expect a maximum of 74 bcm of national fossil gas demand in the same year.[43] If all LNG projects were implemented as planned, Germany would have an overcapacity of at least 50 bcm in 2030. Such overcapacity would be a dangerous energy policy failure and economic boondoggle, especially if public subsidies are footing the upfront bill and shouldering the downside risk in long-term contracts.



A recent study looking at the EU's future gas supply similarly finds that by 2035, there will be a fossil gas supply glut in the EU, taking into account production in Norway and Algeria, the EU's foremost suppliers; its own production; and existing contracts.[44] Europe's Agency for the Cooperation of Energy Regulators (ACER) concluded that the EU is likely to have reached peak LNG demand in 2024.[45]



LNG ramp-up in Germany would worsen climate damage

The creation of massive LNG overcapacities would drive both Germany and exporting countries into a fossil path dependency as German investments flow both into import capacities and export facilities in the United States.[46]

The creation of new fossil infrastructure conflicts with the German Climate Protection Act, which stipulates that Germany must achieve greenhouse gas neutrality by 2045.[47] Yet a recently published report confirms that Germany is about to fail its climate targets after 2030 and might reach its 2030 target only due to the economic recession caused by the global pandemic.[48] The import terminals Germany is planning to have in 2030—if used to their full capacity to import U.S. LNG—would lead to 870 million tons of carbon dioxide (CO2) emissions, when the gas is burned. Additionally, the production of the gas would cause 2.9 million tons of methane emissions based on the methane intensity factor provided by the International Energy Agency (IEA). Such warming potential equates to 85.4 million tons of carbon dioxide equivalent (CO2e) over a time span of 100 years, or up to 236.4 million tons of CO2e if the impacts of the two gases are compared over 20 years.[49] The massive amounts of CO2 and methane emissions that could be emitted by the LNG terminals and the combustion of the imported LNG would consume a large part of the remaining budget that Germany still has to meet in line with the Paris Agreement.

Climate impact of U.S. fossil gas and LNG

Fossil, or "natural," gas is made up of 70 to 90 percent methane—a potent, planet-warming gas that accounted for 12 percent of U.S. greenhouse gas emissions in 2022 and is worsening the climate crisis.[50] The climate impact of fossil gas is so high due to the potency of methane, which "has more than 80 times the warming power" of CO2 over 20 years. .[51] In fact, the carbon footprint of U.S.-fracked gas converted into LNG is at least as bad as that of coal when accounting for the methane leaks that occur during extraction, transportation, and storage.[52]Recent studies have shown that methane pollution caused by U.S. oil and gas extraction is more than four times higher than official figures and more than eight times higher than industry targets.[53] From production to distribution, fracking produces significant methane pollution at every step in the process, including from gas leaks, combustion, and contamination, while the underregulated nature of the industry has led to flaring and venting during oil and gas production, which are also large sources of methane emissions.[54] A recent study notes, "Even [considering] the time frame of 100 years after emission, which severely understates the climatic damage of methane, the LNG footprint equals or exceeds that of coal."[55] In other words, even apart from the other environmental and human rights impacts, U.S. LNG derived from fracked gas is some of the most climate-damaging fossil gas available on the market.

Substituting Germany's reliance on LNG from Russia with reliance on the United States does not guarantee security

Replacing dependence on Russia with dependence on the United States only shifts the problem to reliance on another world power with an expansive military that is renegotiating their commitments to European security.[56] Russian President Vladimir Putin has used energy as a weapon to divide Europe and punish Ukraine, and U.S. President Donald Trump has repeatedly signaled he would rather abandon

Ukraine entirely than undermine thawing relations with the Kremlin.[57] In that scenario, German LNG contracts with the United States could easily become a bargaining chip in a broader geopolitical game—subject to pressure, price hikes, or outright disruption if Berlin pushes back against the Trump administration's reproachment with Russia or does not give in to Trump's demands in the trade war kicked off by his administration's tariff hikes.[58] Qatar, another top exporter of LNG, has also made clear its intention to use LNG for political leverage, issuing an ultimatum to cut off LNG from Europe if the latter were to enforce its law allowing liability for damages related to labor and environmental violations.[59]

Trump's claims that world leaders are "dying to make a deal" as well as other derogatory remarks in response to his administration's tariffs suggest that he intended to use them as leverage over other countries.[60] Indeed, President Trump's recent demand that Europe buy an additional $350 billion in fossil energy from the United States to balance the trade deficit and obtain tariff relief is a prime example of what Europe would expose itself to by increasing dependence on U.S. LNG.[61] For its part, the EU has recently submitted an offer to buy a total of 50 billion in goods from the United States, of which LNG would probably account for a significant proportion.[62] Furthermore, as part of tariff negotiations, internal government messages obtained by *The Washington Post* demonstrate that the U.S. State Department recently put pressure on countries to adopt Elon Musk's Starlink for satellite internet services.[63]

"Germany cannot afford to build its energy future on political quicksand."

The Trump administration's prioritization of corporate interests over the national or public interest is not unique to promoting U.S. LNG. A far cry from diplomacy based on peacebuilding and respect for sovereignty, the Trump administration negotiated for U.S. companies to have access to Ukraine's mineral wealth as a step to ending the Russian invasion of Ukraine.[64] President Trump is now seeking to give U.S. investors access to Russian gas infrastructure, such as the Nord Stream 2 pipeline, and restore Russia's gas exports to the EU, a move strongly rejected by European Commission President Ursula von der Leyen and one that would revert to the EU's vulnerability and reliance on Russia.[65]

Germany cannot afford to build its energy future on political quicksand; and that's exactly what locking in long-term LNG contracts with the United States under the Trump administration would mean. If the EU and Germany are serious about maintaining leadership and action on climate, they cannot allow President Trump's fossil fuel agenda to dictate the terms of transatlantic energy trade.[66] The Trump administration has already proven willing to weaponize trade and foreign policy.[67] It has turned on allies before—imposing tariffs on Mexico and Canada, holding military aid to Ukraine hostage, and ripping up international agreements.[68] Germany would face serious risks tying its energy security to an administration that views alliances as transactions and energy as leverage; locking in long-term contracts could pass this leverage on to successive U.S. presidents, without real checks on potential abuse of that power.

New U.S.-German LNG agreements are already being signed

A prime example of a potentially imprudent and harmful contract is the 15-year contract between Delfin LNG and the state-owned German company Securing Energy for Europe (SEFE), signed in March 2025.[69] For this project, Delfin would be building its deepwater port off the coast of Louisiana—a biodiversity hotspot that is already under immense ecological pressure. The Trump administration approved the Delfin deepwater port, which would be the first deepwater port for LNG in the United States.[70] The Deepwater Horizon offshore oil rig explosion and spill, as well as several explosions and worker fatalities and hundreds of fires and worker injuries from offshore oil and gas operations in the United States over the past decade, demonstrates the heightened risks of these projects for Gulf residents and German buyers.[71] German state-owned energy company Uniper concluded another problematic LNG deal with Woodside using a Louisiana terminal in April 2025, only weeks after SEFE's agreement with Delfin LNG.[72] Woodside has an equity interest of 100 percent in Louisiana LNG LLC, in which Saudi Arabia's Aramco agreed to invest as part of the $90 billion investment deal with the United States that President Trump announced after his recent visit.[73]

These agreements increase dependence on foreign imports, create political entanglements with countries that are hugely reliant on fossil fuel exports, and lock in the excessive pollution inherent to LNG while posing significant price risks to German consumers. Germany should avoid these long-term contracts.

The LNG expansion is costly and carries unnecessary economic risks

LNG is expensive, requires excessive and considerable public subsidies, and locks nations into fossil fuel-dependent economies.[74] Moreover, the costs of transportation, liquefaction, and regasification required in the importation of LNG from the United States make U.S. LNG far more expensive than alternative fossil gas supplies via pipelines from countries such as Norway.[75] Furthermore, the economic life of onshore LNG terminals is several decades.[76] This means that constructing these terminals requires either a long-term commitment to the use of fossil gases or acceptance that these will become stranded assets if the terminals are not used and fully amortized. The construction of LNG terminals on both sides of the Atlantic is cementing the dependency on fossil gas during decades that are crucial for achieving carbon neutrality.

Many of the infrastructure projects required of LNG imports would not be economically viable without taxpayer-funded subsidies.[77] Upfront capital is needed for the construction of new pipeline infrastructure, storage tanks, and guarantees, as well as the charter rates and berthing fees for the ships docking with floating terminals. The total expenditure for the charter rate of one of the currently permitted German FSRUs is an average of 55 million euros net per year, which equates to an approximate daily cost of more than net 150,000 euros.[78] For the floating terminals alone, costs are significantly higher than the estimated marketing revenues of the German government.[79] Government subsidies would be better spent on the deployment of clean energy technologies.

Even as large as these public expenditures are, returns on these investments cannot be guaranteed. For example, public investment in the infrastructure-related site costs for the FSRU terminals amounts to about 6.9 billion euros—excluding any income generated from the federal government subchartering to private operators or from the sale of pipeline pipes to private operators.[80] However, some of the

assumed revenues from the FSRU terminals have already failed to materialize, due to cost overruns and project delays, lower-than-expected demand, and competition from other energy sources. For example, the subchartering of the FSRU in the Baltic Sea did not work out due to the private operator reneging on the contract.[81] These risks result in additional costs to the public: The state guarantees at least 8.7 billion euros that can be drawn on to compensate operators for shortfalls in expected revenues, as well as several million in state investments for the construction of onshore LNG terminals.[82]

State investments will also flow into the three planned onshore terminal facilities in Stade, Brunsbüttel, and Wilhelmshaven, where some investment decisions have already been made binding. Public funding for the project in Brunsbüttel currently amounts to 940 million euros, with the German development bank KfW acquiring a 50 percent stake in the undertaking.[83] This massive amount of state aid stands out in particular and is currently contested in a court case by Hanseatic Energy Hub, the prospective operator of the Stade onshore terminal that will directly compete with Brunsbüttel.[84] The European Commission had previously approved 40 million euros in state aid in the form of a preferential dividend mechanism for the Brunsbüttel terminal without even considering the KfW stake as a subsidy.[85]

The German government—not private companies—is taking on the risk of overpayment amid lower-than-contracted demand. Should the conditions for the guarantees materialize, the federal budget could incur total costs for all LNG terminals of at least 16.8 billion euros.[86] (see Figure 4)

"Building up LNG infrastructure means locking in higher costs for decades to come instead of investing in renewable and zero-emission technologies, which are dropping in price."

In addition to the economic risk, locking in LNG infrastructure would cement high costs for German households for the long term. The gas price for German household customers is composed of three constituent elements. First, there are the costs associated with procurement, accounting for approximately 73 percent of the total price; these costs include extraction, transportation, sales, and traders' margins. Second, there are the fees for the use of the corresponding energy infrastructure, accounting for 12 percent of the total price; these fees are known as regulated network charges. Third, there are other levies and taxes, which account for about 15 percent of the total price; examples of such taxes include the CO2 price, concession fees, and the gas tax and value-added tax (VAT).[87]

LNG is more expensive to transport and store than other forms of energy.[88] Building up LNG infrastructure means locking in higher costs for decades to come instead of investing in renewable and zero-emission technologies, which are dropping in price.[89] At a time when households and industries are already squeezed by inflation and energy price shocks, this is no way to establish a resilient economy.[90]

The German government has invested billions of euros toward liquefied natural gas (LNG) terminals

Public funds invested into German LNG terminals in euros, 2025

Terminal	Total public investment**	Total state guarantees
Five floating storage and offloading units (FSRUs) chartered by the German government *	**6.9B** for infrastructure ramp up	8.7B
Onshore LNG terminals in Stade, Wilhelmshaven, and Brunsbüttel	**200M** (investments by Lower Saxony to support port infrastructure) **940M** (investment of the German development bank KfW)	
Total costs	**8.5B** (excluding guarantees)	16.8B (including guarantees)

** Costs from the private FSRU Neptune are not included. Costs of the FSRU Energos Power are included, even though the charter rate will be paid by the private operator through a subcharter contract.*

*** These are approximate costs based on government information. Exact costs vary as exact charter contracts and start dates are not available.*

Source: Andy Gheorghiu Consulting, urgewald, and Deutsche Umwelthilfe, "Investing in climate chaos: How German banks and companies enable fracking LNG projects" (Sassenberg and Brussels, Germany: 2023).

Table: Center for American Progress

Additional economic risks emerge on the export side of LNG in the United States. Climate change continues to escalate the intensity and frequency of hurricanes and flooding along the American Gulf Coast, where the vast majority of LNG export facilities are located, further increasing the physical and financial risks and unreliability of U.S. LNG export facilities.[91] In 2024, Hurricane Beryl resulted in temporary closures of Freeport LNG, an export terminal located in Texas, and even with its multiple 20-year, long-term agreements under "take or pay" terms, where the customers—not Freeport LNG—bear the risk of natural gas supply, Fitch Ratings still downgraded Freeport LNG's default risk and rating.[92] The high climate disaster risk in the Gulf of Mexico and underregulated nature of the LNG industry in the United States could result in disruption to LNG deliveries from these facilities, potentially increasing the costs of finding alternative supplies with little notice.

German LNG infrastructure is vulnerable to security threats, accidents, and climate-related disasters

The operation and construction of LNG infrastructure in Germany poses new security threats due to the terminals' location and surrounding infrastructure.[93] Many terminals are situated near sensitive sites such as closed nuclear plants, petrochemical clusters, important shipping routes, and residential areas, raising concerns about potential vulnerabilities in case of accidents or attacks. Their proximity to residential areas and nature reserves also heightens the risk of damage to communities in the event of a disaster. The fact that security risks are not sufficiently managed is proven by an accident that recently took place when the LNG carrier Iberica Knutsen ran aground before the island of Rügen.[94] And the terminals' location along busy marine routes, such as the Elbe River, which features narrow waterways, complicates both maritime traffic management and emergency response, and requires security expenses and monitoring.[95] Building up these large, permanent LNG capacities in Germany instead of quickly ramping down gas consumption introduces new vulnerabilities to sabotage and attacks on critical points in Germany's energy import infrastructure. LNG facilities can be exploited by hostile parties in an increasingly volatile geopolitical atmosphere and unstable climate.

> "LNG facilities can be exploited by hostile parties in an increasingly volatile geopolitical atmosphere and unstable climate."

LNG terminal facilities are also first-class hazardous incident facilities. The 2022 explosion and fireball at the U.S. LNG facility in Freeport, Texas, was a reminder of the extreme explosive potential of compressed fossil gas. Although the explosion was felt miles away,[96] Freeport LNG claimed that "[a]t no time did the incident pose a threat to the surrounding community." The facility was allowed to reopen just eight months later, despite a U.S. Department of Energy probe concluding that the explosion was a result of overworked staff leading to operator fatigue as well as faulty operating procedures.[97]

Climate change is increasing the frequency of extreme weather events, and even minor alterations in mean sea level have the capacity to enhance the frequency and intensity of flood events.[98] It is anticipated that storm surges, heavy rainfall events, and flooding will become both more extreme and more frequent. The effects of these phenomena are already clearly observable in the Baltic and North seas as well as along the Elbe River.[99] The Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) was published by the Intergovernmental Panel on Climate Change (IPCC) in 2019.[100] The findings from the SROCC demonstrate that the rate of sea level rise for the 1993–2015 measurement period is significantly higher than the average rise assumed in the IPCC's last report, from 2013.

Yet recent studies of floods in Germany, including 2021 floods in Rhineland-Palatinate and North Rhine-Westphalia, as well as Storm Viktor in October 2023, have not been incorporated into the planning for the new LNG terminals in Germany. These floods, which have been described as "floods of the century," or historical centennial events, had serious consequences and will occur more frequently

in the future due to climate change.[101] Assessments of the so-called floods of the century have also not been incorporated into analysis by the authorities responsible for issuing permits.

Pollution from LNG infrastructure harms ecosystems and people

The construction and operation of onshore and floating LNG terminals in Germany means building fixed infrastructure such as pipeline connections, regular dredging of harbors, new installation of jetties, and an increase in pollutant emissions for the surrounding areas. This leads to long-term changes for the environment and wildlife as well as new threats to human health.

Impacts on ecosystems, wildlife, and fisheries

In addition to the climate, geopolitical, economic, and security effects of German LNG expansion, the environmental impact on German coastal areas would be devastating. The construction and operation of new LNG terminals is currently leading to an industrialization close to protected areas on a scale never before seen.[102]

The LNG Acceleration Act enables FSRUs, as well as connecting pipelines for terminals, to be built without environmental impact assessments.[103] This LNG infrastructure and the increased shipping traffic pose significant threats to several Natura 2000 sites designated to conserve nature and biodiversity, as well as other protected areas. In Germany, a total of 14 Natura 2000 sites are affected by LNG infrastructure, including eight special protection areas (SPAs) for birds and six flora-fauna-habitat (FFH) sites. The construction of LNG terminals and pipelines leads to habitat destruction and fragmentation, encroaching on protected ecosystems and displacing wildlife. Large-scale construction activities disturb sensitive species, altering their natural behavior and movement patterns.[104]

Many EU-designated protected areas and habitat sites are threatened by liquefied natural gas (LNG) infrastructure

Natura 2000 sites located near LNG infrastructure in Germany

LNG site	Natura 2000 site	Threatened area type	ID
Rügen	Westliche Pommersche Bucht	Special Protection Area (SPA)	DE 1649-401
	Greifswalder Bodden und südlicher Strelasund	SPA	DE 1747-402
	Greifswalder Boddenrandschwelle und Teile der Pommerschen Bucht	Flora-Fauna-Habitat (FFH)	DE 1749-302
	Greifswalder Bodden, Teile des Strelasundes und Nordspitze Usedom	FFH	DE 1747-301
Wilhelmshaven	Voslapper Groden-Nord	SPA	DE 2314-431
	Voslapper Groden-Nord	SPA	DE 2414-431
	Nationalpark Niedersächsisches Wattenmeer	FFH	DE 2306-301
	Niedersächsisches Wattenmeer und angrenzendes Küstenmeer	SPA	DE 2210-401
Stade	Unterelbe	FFH	DE 2018-331
	Unterelbe	SPA	DE 2121-401
Brunsbüttel	Schleswig-Holsteinisches Elbästuar und angrenzende Flächen	FFH	DE 2323-392
	Kudensee	FFH	DE 2021-301
	Kudensee	SPA	DE 2021-401
	Vorland St. Margarethen	SPA	DE 2121-402

Source: Bundesamt für Naturschutz (Federal Agency for Nature Conservation), "Natura 2000 Areas" (last accessed May 2025).
Table: Center for American Progress

The cumulative impacts of LNG projects threaten the integrity of protected areas by disrupting food webs, degrading habitats, and reducing biodiversity, especially among protected fish and bird species. The delicate ecological balance of these areas is altered, compromising long-term conservation goals. Despite existing mitigation efforts, the continued expansion of LNG infrastructure presents a major challenge to preserving some of Germany's most valuable and sensitive natural habitats.

"The cumulative impacts of LNG projects threaten the integrity of protected areas by disrupting food webs, degrading habitats, and reducing biodiversity."

The expansion of LNG infrastructure inevitably leads to more shipping activity, increasing the likelihood of vessel collisions with marine mammals such as porpoises and seals. A typical LNG tanker carries about 0.1 bcm LNG, meaning that Germany's envisaged LNG import capacity by 2030, if fully utilized, would lead to up to 580 additional tankers arriving every year.[105] The resulting wave action and altered hydrodynamics could further degrade tidal zones and nesting habitats.[106] Moreover, a higher number of vessels raises the risk of maritime accidents, including gas spills, which would have devastating consequences for fragile coastal and marine environments.

Another concern linked to LNG activities is water pollution. The discharge of heated cooling water from LNG terminals can raise local water temperatures, putting additional pressure on natural ecological balances. The release of biocides and other harmful substances further threatens aquatic life, impairing

species reproduction and degrading habitat quality.[107] Construction activities also contribute to increased sedimentation, which decreases water clarity and depletes oxygen, placing additional stress on already vulnerable ecosystems.

One of the most severe implications of LNG infrastructure is the impact on marine mammals, especially harbor porpoises and seals. Germany's only native cetacean, the harbor porpoise (*Phocoena phocoena*), is particularly vulnerable to intense underwater noise generated by ship engines, dynamic positioning systems, regasification processes, and construction activities. Chronic noise pollution interferes with their echolocation and communication, causes physiological stress, and forces them to abandon critical habitats.[108] Seals, which rely on undisturbed coastal and marine environments, are similarly affected. Noise from construction and operational activities can disrupt their resting, breeding, and foraging behavior.[109] Both species are highly sensitive to changes in their acoustic environment, making them especially vulnerable to the cumulative effects of LNG infrastructure near their habitats.

In addition to acoustic disturbance, LNG projects contribute to habitat and prey loss, further endangering marine life. For instance, maintenance dredging for FSRUs, such as around the LNG terminal in Mukran in the Baltic Sea, degrades water quality and impacts the availability of herring—a key prey species for both porpoises and seals.[110] Fish populations are also at risk, facing a combination of threats, including the loss of spawning grounds and feeding habitats, often due to dredging and sedimentation. Pollutant deposition from LNG operations contributes to eutrophication, which can result in oxygen-depleted "dead zones" where aquatic life cannot survive, especially in Baltic Sea ecosystems.[111] Furthermore, the water intake systems used for the regasification process can cause impingement and entrainment, killing enormous amounts of fish eggs, larvae, and small organisms.[112]

One of the operating FSRUs in Wilhelmshaven, the Höegh Esperanza, uses sodium hypochlorite as an antifouling biocide. Permanent chlorination and the subsequent products from chemical reactions are a major threat to marine life as well as to local fisheries. These chemicals are used to prevent organisms such as mussels from growing on infrastructure; but they also have toxic effects on plankton, fish, and benthic flora and fauna when disposed to open water, disrupting the base of the marine food web and reducing overall biodiversity.[113] The FSRU was approved to use biocide even though Wilhelmshaven is located next to the Wadden Sea UNESCO World Heritage Site and its pristine marine life.[114] This FSRU was initially intended to be used south of Melbourne, Australia, but after failing environmental regulations due to the usage of biocide,[115] it was relocated to Germany, where it is now harming a whole marine ecosystem.[116]

While marine species are significantly affected, LNG infrastructure also impacts migratory birds, particularly in coastal and wetland areas. Light pollution from terminals and vessels disorients birds during migration, increasing exhaustion, collisions, and mortality.[117] Erosion and changes in water currents threaten tidal flats, essential feeding, and nesting grounds for numerous bird species.

Impacts on human health

Pollutant emissions from German LNG terminals are explicitly regulated, with various exemptions that pose serious health risks. The floating terminal in Wilhelmshaven that uses biocides releases large

amounts of chlorine into the Jade Bay and the Wadden Sea.[118] The biocide and its subsequent products from chemical reactions can accumulate in marine organisms such as mussels, which are then consumed by humans.[119]

In addition, the floating terminal in Brunsbüttel is allowed to emit many times the normal levels of nitrogen oxide,[120] carbon monoxide,[121] and formaldehyde.[122] This has been regulated by the Schleswig-Holstein environmental agency through a special permit.[123] Such high emissions can cause serious health problems in nearby residential areas. The pollutants are also deposited in the soil, contaminating the surrounding area. This may contribute to localized exceedances of critical nitrogen loads in nearby habitats, including forests and water bodies. In turn, this could potentially result in adverse effects on sensitive ecosystems—possibly also in areas used for recreational purposes, such as popular swimming spots around Rügen. A significant impairment of these ecosystems cannot be ruled out and may, under continued operation, be considered likely.[124]

While sufficient data do not yet exist on the impact of air pollution from German LNG terminals on human health due to their recent entry into operation, research on methane[125] and power plant emissions,[126] along with the experience of the United States, shows that they can be severe. Frequent venting and flaring of fossil gas at U.S. export terminals have been linked to catastrophic levels of air pollution, with pollutants such as nitrogen oxides, carbon monoxide, soot, volatile organic compounds, and methane far exceeding safety levels and causing respiratory illnesses, among other ailments.[127] For example, the city of Port Arthur, Texas, which suffers from proximity to a highly polluting LNG terminal and other fossil infrastructure, has recently been included by the United Nations in its list of "sacrifice zones" due to its extremely high air pollution and cancer rates.[128]

Downstream infrastructure such as gas power and heating plants also causes major air pollution in surrounding areas. Major pollutants emitted include sulphur oxides, nitrous oxides, carbon monoxide, and methane,[129] leading to respiratory illnesses and premature deaths, especially among the elderly and young as well as people with preexisting conditions. Fossil gas infrastructure contributes significantly to air pollution, which is already exceeding threshold values in several German cities.[130] Plans by the new German government to build 20 gigawatts (GW)[131] of new power plants instead of accelerating the expansion of renewables, batteries, and efficient grids would lock in future air pollution and health impacts as well as climate damage.[132]

Furthermore, the noise pollution for residential areas in the vicinity of LNG terminals is fundamentally underestimated, and relevant noise guidelines are exceeded by the terminals already in operation in some cases.[133] The noise pollution at the terminals is not only caused by the generators on board the FSRUs or by the regasification and loading processes but also by the gas combustion units, which are designed to burn excess gas in a controlled manner in emergencies. According to the operating licenses, this system may only be used in the event of danger to public safety or to avert an operational emergency. The fact that the gas combustion units onboard FSRUs in Germany frequently flare gas is a cause for concern. Either there are constant emergencies that pose a risk to public safety, or the company systematically disregards the regulations. Both are unacceptable and endanger people and animals.

Moreover, noise pollution impairs the quality of life of people living near the plants. Noise from the turbines disturbs sleep and rest periods. Depending on the wind direction, the noise is also carried several kilometers inland. And people suffer not only from the constant roar of turbines but also from low-frequency sounds that lead to harmful conditions for residents.[134] Both are harmful to the health of humans and animals. The low-frequency sounds pass through walls, windows, and doors.[135] There are no working hours, no closing times, and no rest periods—such as on weekends or at night—to which operators adhere.

Light pollution from the FSRUs is also negatively affecting residential areas. LNG terminals are illuminated 24 hours a day, but the strong lighting at night can lead to sleep disorders and increase the risk of diseases such as obesity, depression, diabetes, and cancer.[136] Excessive lighting impairs the quality of life for people living near the installations. As part of the emissions-control approval process, permitting authorities of the German LNG terminals found that calculated illuminance levels and the values for psychological glare, particularly at night, were well below the illuminance guide values. However, the estimated lighting intensity from the plants in these simulations may not correspond to the actual conditions and must be verified and monitored.[137]

The high levels of pollution, light, and noise associated with LNG terminals have a massive impact on the health of the local environment and the people who live there, and these externalities and quality-of-life concerns disfavor further expansion of LNG import facilities.

Exporting LNG increases energy costs and pollution exposure for Americans

U.S. exports of LNG have expanded rapidly over the past decade, but with significant negative externalities for many Americans. U.S. households and businesses are now exposed to global gas markets, in addition to global oil markets. The lifecycle of LNG—from fracking fields in Appalachia to pipelines crisscrossing dozens of states to compression terminals primarily along the Gulf Coast—increases pollution for millions of Americans in its wake.

LNG exports increase energy costs for American households and businesses

In the United States, exports of liquefied natural gas have contributed to increased energy costs for Americans. LNG exports raise domestic prices by increasing demand for gas produced in the United States and connecting domestic gas markets to higher global prices, which increases domestic exposure to price fluctuations in the global market and the consequences of geopolitical conflicts, such as the Russian invasion of Ukraine. Residential natural gas prices generally decreased between 2009 and 2018 as a result of increased shale gas production.[138] In 2016, the United States built its first LNG export facility and became a net exporter of natural gas in 2017.[139] Residential gas prices increased by 38.8 percent between 2019 and 2024, in nominal terms, partially due to rapid growth of LNG exports and the integration of domestic and international natural gas markets.[140]

In November 2021, utilities across the country filed requests to raise natural gas rates, citing a supply squeeze from increased global demand.[141] The following year, the United States increased exports to Europe amid Russia's invasion of Ukraine, and domestic natural gas prices in the United States reached highs not seen since 2008, with residential prices averaging $14.75 per million British thermal units (MMBtu).[142] Residential and industrial natural gas prices in 2022 were 36.8 percent and 131.6 percent higher, respectively, than prices in 2020. Meanwhile, U.S. expenditures on natural gas across sectors in 2022 were 38 percent higher than expenditures in 2021, while consumption only increased by percent.[143] New England, one of the few U.S. regions that relies on LNG imports and hence competes with the global market directly, saw a weighted-average price between December 2021 and November 2022 that was triple the price over the same period between 2020 and 2021.[144]

In addition to the effect of global geopolitical tensions on U.S. domestic prices, the U.S. Department of Energy (DOE) analyzed the general relationship between expanding LNG exports and domestic natural gas prices. The DOE analysis showed that an unconstrained increase in LNG exports would be associated with higher U.S. residential natural gas and electricity prices in 2050, with households experiencing up to a $122.54 annual increase in energy expenditures.[145] Furthermore, the analysis showed that increasing LNG exports would not only increase household energy costs as a result of exposure to the global market but also increase indirect costs passed through from U.S. manufacturers who themselves would face overall energy cost increases of up to $125 billion.[146]

Other studies reiterate the relationship between expanding LNG exports and U.S. domestic prices. An analysis from the nongovernmental organization Resources for the Future found that domestic gas prices could see more than twice the increase estimated by the DOE.[147] The U.S. Energy Information Administration (EIA) found that higher LNG exports resulted in upward pressure on domestic natural gas prices, while lower LNG exports resulted in downward pressure.[148] The EIA analysis projects wholesale natural gas prices by 2050[149] under a scenario with faster build-out of LNG terminals and higher LNG prices than a reference case with restricted LNG capacity expansion. Public Citizen analysis, building on EIA modeling, found that increased export capacity would cost domestic consumers $14.3 billion in 2050.[150] More recently, the EIA forecasted the average 2026 Henry Hub price at $4.80/MMBtu, which is more than double the price from 2024, attributing the increase to rising LNG demand.[151] Continuing or expanding U.S. LNG exports would further increase domestic natural gas and electricity prices, with negative economic impacts on both American consumers and businesses—except for the oil and gas industry itself.

Pollution from the lifecycle of LNG inflicts harm on American families, especially low-income and working-class households

The upstream impacts of LNG throughout its lifecycle—from extraction to transportation through pipelines and freight to liquefaction and storage—all emit harmful pollution that harms American families, especially low-income and working-class households and communities.

Extraction

Nearly 80 percent of U.S. natural gas is produced by hydraulic fracturing, or "fracking," a process that blasts fluid below the earth's surface to release oil and gas reserves within sedimentary rock.[152] Countless studies have shown that fracking has exposed residents in the United States to dangerous chemicals that compromise their health and development and that "regulations are incapable of preventing harm" inherent in the process of gas and oil extraction—including air and water pollution, increased earthquakes and tremors, radioactive waste, and well leaks.[153] Across the United States, these harms have been linked to increased heart attacks, early deaths among older adults, higher risk of cancer in children, worsened asthma symptoms, poor childbirth and child development outcomes, poor mental health, and high levels of migraine and fatigue symptoms.[154] An analysis of fracking in the Appalachian region, which spans across 13 U.S. states, including New York, Pennsylvania, and Tennessee, found that between 2004 to 2016—even prior to increased production for LNG exports—1,200 to 4,600 premature deaths from fracking-related pollution in communities yielded economic costs of $23 billion and climate costs of $34 billion.[155]

Fossil gas extraction is also a source of human rights violations and environmental injustices, as it concentrates pollution in specific geographies and neighborhoods along economic and racial lines.[156] More than 18 million Americans live within a mile of a fracked oil or gas well, and a disproportionate share of them belong to marginalized or vulnerable groups, including 3 million older adults, 3 million who live in households below the poverty line, more than 1 million young children, and millions of people of color.[157] For instance, in the majority-Latino town of West Odessa, Texas, residents are situated in the "heart" of the most productive gas and oil field in the United States.[158] Though the fracking boom in Texas' Permian Basin has brought jobs to the region, they have "come at a cost" for communities confronted by dangerous toxins and undrinkable water—only a single spill or explosion away from ruin.[159] In fact, the U.S. Environmental Protection Agency recently concluded that oil and gas fracking brings a high risk of unsafe drinking water.[160] As a result of oil and gas production, Americans had $77 billion in additional health costs in 2016 alone, as a result of 410,000 cases of worsened asthma, 2,200 new cases of asthma in children, and 7,500 excess deaths.[161]

At both a community level and on a national scale, the science has shown that fossil gas and fracking are clear threats to the health of the American people.[162]

Transportation over land

In addition to extraction, the pipelines and facilities that contain fossil gas compound Americans' health risks and environmental harms. The United States has a 3 million-mile natural gas pipeline network.[163] These pipelines leak an estimated 2.6 million tons of methane every year, with some researchers finding that emissions might be four times higher than current estimates.[164] Pipeline leaks in U.S. communities expose nearby residents to methane and other dangerous pollutants, such as nitrogen oxides, volatile organic compounds (VOCs), and hydrogen sulfide, all of which can increase the occurrence of cancer, premature births, and respiratory issues, especially for outdoor workers, pregnant people, and children.[165]

One study found that the density of natural gas leaks in U.S. metropolitan areas increases by 37 percent as the percentage of households of color increases and by 26 percent as median household incomes decrease.[166] The U.S. Department of Transportation estimates that in 2024 alone, a total of 260 significant gas pipeline incidents resulted in 13 fatalities, 35 injuries, and $148 million in property damages.[167]

Liquefaction and export terminals

LNG export terminals also threaten U.S. health and safety, with direct air pollution from currently operating terminals resulting in $957 million in health costs for Americans and 60 premature deaths annually. All currently operating U.S. terminals are estimated to cause up to 2,020 premature deaths and nearly $29 billion in total health costs by 2050; yet these estimates would more than double if full LNG build-out of planned projects were to occur.[168]

U.S. energy infrastructure is often sited near low-income Black and Hispanic communities, unevenly distributing the impacts of fossil gas facilities.[169] As shown in the Sierra Club's LNG export tracker, air pollution from operating LNG terminals along the Gulf Coast's chemical and industrial corridor—part of which is known as "Cancer Alley"—exerts heavy health burdens on neighboring communities, most of which are low income, including Jefferson Davis, Calcasieu, and Cameron parishes in Louisiana.[170] These three parishes each have lower median incomes than the national average and, in 2023, had the three highest rates of premature deaths per million people—up to 17.4 million, 13.1 million, and 10.1 million deaths, respectively—due to pollution from operating the Sabine Pass, Cameron, and Calcasieu Pass LNG terminals.[171] Communities near these terminals have also cited concerns about underreporting of emissions from flaring at liquefaction facilities.[172]

A study of flared natural gas in North Dakota found that ZIP codes exposed to heavier amounts of flaring tended to be economically disadvantaged and that neighborhoods that were exposed to more than half of all flared natural gas extracted less than 20 percent of all resource wealth, indicating that the economic gains from fracking development are not realized by the populations most exposed to its pollution.[173]

German energy company contracts with a U.S. LNG company that is increasing pollution and worsening quality of life for local residents

In April 2025, the German energy company Uniper signed a new LNG supply agreement with Woodside, a planned new LNG export terminal in Calcasieu Parish, Louisiana.[174] At least one insurance company has dropped insurance for the facility, possibly due to sustained opposition and growing climate risks.[175] The area already has extensive fossil infrastructure that particularly affects disadvantaged populations. The existing Calcasieu Pass terminal causes massive local pollution by venting and flaring in continuous breach of environmental permits and decimates fish stocks, threatening local fisherfolk's way of life. The LNG going through Louisiana's export terminals is produced almost exclusively from fracked gas, an extremely harmful production method associated with cancer and a variety of negative environmental and health impacts resulting from air, water, and soil pollution.

The impacts of gas terminals and pipelines in U.S. communities are also amplified by environmental racism and human rights abuses, including through the exploitation of indigenous people and marginalized communities.[176] LNG terminals built on U.S. Tribal territories can degrade the quality of water, wildlife, and sacred areas, exerting disproportionate health harms on communities of color and residents with low incomes, who often lack the political and social capital necessary to stave off polluting industries that see them as "paths of least resistance."[177] Communities of color and low-income populations in Louisiana and Texas, for instance, are more likely to be adversely impacted by LNG facilities and see higher rates of cancer, asthma, and obesity as a result.[178] If all currently planned LNG terminals and expansion projects in the United States are built by 2030, Black and Hispanic Americans would be exposed to air pollution at rates up to 170 percent and 129 percent higher, respectively, than white Americans.[179]

While the health harms from fossil energy are concentrated in marginalized communities, the economic benefits of oil and gas activities do not "trickle down." Of Americans that rely on the fossil fuel industry for revenue and jobs, nearly half of them live in areas with higher rates of poverty, air pollution exposure, health problems, unemployment, inaccessible transportation, or a combination of these factors.[180] Moreover, major oil and gas plants are being planned along the Gulf Coast in flood-prone areas, which only heighten the risks and harms from natural gas expansion and the need to counteract increased production.[181]

The fossil gas industry continues to "greenwash," but LNG is one of the biggest threats to a livable climate

In the face of mounting human health and environmental harms, the fossil gas industry has rhetorically positioned itself as a dedicated member of the "clean energy" economy,[182] while its actions reflect a continued pursuit of fossil fuels. The gas industry is currently trying to push "gas certification," which would charge a premium to certify whether or not wells are "responsibly" sourcing gas and staying below certain methane emissions thresholds.[183] Yet the gas certification process has been found to unreliably detect pollution events, lack transparency and public access with regard to monitoring data, and overstate its role in reaching net-zero goals, which misleads the public and regulators in climate-conscious markets such as Europe.[184]

In 2023, the global oil and gas industry invested $28 billion into "clean energy," which the IEA considers to be nuclear energy, fossil fuels used with carbon capture, and low-emissions fuels, in addition to renewable energy.[185] This amounted to less than 4 percent of the industry's total spending, with less than half of this investment going toward wind and solar energy.[186] The world's largest oil and gas companies are estimated to spend more on climate-related communications than actual climate solutions.[187] Only 12 percent of their capital investments go toward "low-carbon solutions," largely to technologies with questionable or overstated effectiveness in reducing overall emissions, such as fossil-based hydrogen and carbon capture and storage.[188]

"The world's largest oil and gas companies are estimated to spend more on climate-related communications than actual climate solutions, with only 12 percent of their capital investments going toward "low-carbon solutions."

The fossil gas industry seeks to cement itself as the prime solution in the clean energy transition while understating its role in driving climate change, stagnating long-term energy security, and blocking new investments in cleaner solutions that are far more equitable and beneficial for public and environmental health.[189] Doubling down on LNG terminals now would mean locking in fossil fuel infrastructure for decades when the country needs to accelerate decarbonization now.

Germany should invest in cheaper and cleaner alternatives to fossil gas

Fossil gas use accounts for about 15 percent of Germany's gross electricity generation and persists mainly in industry, heating applications and power production.[190] Every year, the country pays about 20 billion euros in fossil gas imports alone.[191] Cheaper and cleaner alternatives already exist to replace almost all of current gas consumption in Germany and the EU.[192] Renewable technologies and electrification provide the only viable basis for a resilient, affordable and future-proof European energy system, while also avoiding the geopolitical dependency fostered by the current resurgence of fossil gas.[193] Progress on building a 100 percent renewable energy system in Europe is uneven but ongoing,[194] and there are particularly beneficial developments in solar and battery prices and deployment.[195] The German government and the IEA recently issued an "Energy Policy Review" for Germany, outlining a pathway for a secure and sustainable energy transition and how to build on actions that are already underway across Europe.[196]

Power

In the power sector, renewable technologies such as wind and solar energy installations have, for years, held a cost advantage over new fossil power plants, to the point where there is little market interest in building new gas-fired power plants without significant subsidies.[197] To even make them viable, the new German government is planning to subsidize the addition of 20 GW gas power plants while simultaneously looking to lower support for renewable energy installations.[198]

"In a recent analysis spanning 24 European countries, the International Monetary Fund found that a 1 percent increase in renewable energy production, on average, equaled a 0.6 percent power price decrease."

Renewable energy also has a price-lowering effect on wholesale power prices, as it is produced at zero marginal cost. In a recent analysis spanning 24 European countries, the International Monetary Fund found that a 1 percent increase in renewable energy production, on average, equaled a 0.6 percent power price decrease, which is a significant benefit to households as well as industrial electricity consumers.[199] Last year in Germany, record levels of renewable energy generation contributed to an 18 percent fall in power prices compared with 2023.[200] Renewables also have the key advantage of requiring no continuous purchase of costly and polluting fossil fuels, as sun and wind energy do not need to be purchased or exploited from the ground. Fossil gas power plants, by contrast, are the highest-cost power-generation technology currently online in Germany and thus tend to be price-setting in electricity markets, which has a massive impact on power prices in times of high gas prices, such as during the early years of Russia's war on Ukraine.[201]

Reasonable planning and regulation can address challenges with the intermittency of renewables to reap the full cost-benefits for consumers. A recent study found that by ramping up the installations of batteries—prices for which have been falling rapidly—the EU could save an annual 9 billion euros in fossil gas costs by 2030.[202] Germany could have avoided 36 gigawatt hours (GWh) of expensive fossil power in June 2024 alone if it had 2 GW more battery capacity, which is only 20 percent more than currently installed.[203] Yet ramping up battery storage as a flexibility and power system backup option is largely overlooked by the new governing coalition's plans for the German power market.[204] Similarly, smart regulation allowing grid charges and power prices to better reflect system conditions and renewable energy capacity could make the power system considerably more efficient, driving down costs and setting incentives for grid expansion where it is needed the most.[205]

Heat

The majority of low- to medium-heat applications are currently powered by fossil gas, which means that almost all gas heating systems in residential buildings as well as most industrial gas use could be replaced with heat pumps.[206] Increasing the share of heat pumps also has significant system benefits, as they provide another flexibility option to balance the grid, enabling greater renewable energy shares.[207] Decarbonization scenarios consistently show a much higher share of heat pumps in the industry and heating sectors, which brings benefits to consumers, in addition to replacing gas demand and enabling carbon neutrality.[208]

A recent study published in *Nature* highlights how heat pumps could contribute to rapidly reducing gas consumption in Germany.[209] The study compares several heat pump deployment scenarios in the residential, commercial, industrial, and power sectors, finding that up to 60 percent of the gas imported by Germany from Russia in 2020 could be substituted by 2025. Despite higher installation costs, heat pumps have significant long-term cost benefits, compared with gas boilers.[210]

Unfortunately, heat pumps have become an extremely divisive issue in Germany due to public discontent over perceived installation costs associated with Germany's Buildings Energy Act (2023–2024),[211] leading to misinformation and falling heat pump sales.[212] The German far right, including the Alternative for Germany (AfD), successfully politicized the issue, capitalizing on people's fear over rising energy and associated costs.[213] The new Buildings Energy Act still includes significantly increased support for heat pump installations, but due to correctable problems in policy design, the expected rise in installation figures has, so far, not materialized.[214]

Additionally, the incoming new government has announced it will scrap the Building Energy Act, which would slow down the heating transition and risk increasing reliance on fossil gas.[215] While some policy adjustments are needed, giving up on heat pumps would hurt consumers and continue the cycle of scrambling for gas imports every time there is a shortage or price spike due to geopolitical volatility.[216] There is a better course of action to advance the heating transition and save households money, while also saving tax funds and cutting back on bureaucracy. Instead of reducing financial support for heat pumps, it would be better to restructure the support scheme from a percentage-based subsidy, which incentivizes heat pump manufacturers to raise prices and leads to higher prices in Germany than other European countries, to fixed price support, which would provide a set euro discount per heat pump.[217] Other much needed policies to jump-start heat pump installations include streamlining permitting and installation requirements, training installers, and requiring utilities to install smart meters for heat pump users while scrapping subsidies for fossil and biomass heating systems.

Industry

Proponents of fossil gas support a narrative that carbon capture and storage (CCS) and hydrogen can enable a pathway for fossil gas toward zero greenhouse gas emissions.[218] This narrative is used to justify new fossil gas infrastructure such as LNG terminals and gas power plants on the assumption that they can be converted to run on hydrogen or fitted with CCS technology at a later date.[219] This is highly

speculative at best and actively harmful at worst. Electricity-based technologies such as heat pumps and arc furnaces already exist and provide by far the most energy-efficient decarbonization pathway for industry.[220]

CCS is very expensive, primarily due to its considerable energy requirements.[221] Cost reduction due to technological improvements is unlikely, as CCS is also characterized by high design complexity and a need for customization according to the use case, so even long term, it is likely to require considerable public subsidies to be economically viable.[222] As a result, economic large-scale applications mainly exist outside of enhanced oil recovery, which further fuels climate change.[223] A study comparing low-CCS with high-CCS scenarios from the IPCC's sixth assessment report found that a high reliance on CCS would make the transition to climate neutrality by 2050 $30 trillion more expensive.[224] CCS costs are not expected to fall significantly in the future, as the same study shows that "in more than 40 years, estimates of the costs of fossil power with CCS have not declined at all, indicating a lack of technological learning in any part of the process." CCS should only be considered where it is the only available option, such as capturing unavoidable process emissions; it cannot serve as a widely applicable solution to decarbonizing fossil gas use.

Green hydrogen development is currently massively lagging behind envisioned targets, with a recent study published in *Nature* showing that only 7 percent of global capacity announcements were finished on schedule.[225] Green hydrogen is set to become a scarce and pricey commodity with severely limited applications, likely for the coming decades.[226] Any hopes of decarbonizing new fossil gas power plants by converting them to hydrogen, as the new German government is planning, are thus highly unlikely to succeed and would lead to massively increased power prices even if they do. Blue hydrogen—that is, hydrogen produced on the basis of fossil gas with the resulting CO2 emissions avoided with CCS technology—is not a likely solution either. The high capture rates needed to provide any climate benefit are currently unattainable, with some analysts estimating that blue hydrogen would have an even worse climate impact than fossil gas.[227]

Regardless of the carbon intensity of the hydrogen itself, blending hydrogen with methane or using infrastructure intended for methane for hydrogen instead is not currently possible at high volumes.[228] The size differential and physical properties of the two gases make it unlikely that affordable and feasible solutions will be available any time soon.[229] Increased leakage,[230] embrittlement of container materials, and safety concerns are all large barriers to substituting hydrogen in place of methane using the same infrastructure.[231]

Recommendations

Germany

The new German government should not continue the previous government's course of increasing LNG terminal overcapacity while looking for new long-term LNG contracts. Additional long-term LNG capacity is not needed to provide security of supply given future gas demand projections, and new contracts would lock Germany into fossil energy use for decades to come. This would increase costs for

consumers, taxpayers, and businesses while creating a new dependency and potential energy security risk that could hurt the German economy, much like the recent dependency on Russian gas.

Instead, the new German government should strive to provide energy and climate security simultaneously by actively reducing dependence on fossil gas and increasing the deployment of clean energy. It needs to accelerate the decommissioning of gas grids and the installation of heat pumps while accelerating renewable energy and battery deployment, rather than new gas power plants, to cover future power demand. Only by decisively promoting an energy transition based on renewables rather than fossil gas can the new government provide a secure, affordable, and clean energy system, safeguarding the prospects of Germany's economy in times of rapidly accelerating climate change and geopolitical uncertainty.

United States

Pushing LNG exports serves the oil and gas industry's interests at the expense of Americans' pocketbooks and health. The United States should stop pressuring allies into long-term fossil fuel infrastructure and LNG import deals that would undermine their energy transitions and independence. Coercive diplomacy—whether through back-channel deals, trade threats, or conditional military support—erodes America's credibility, damages transatlantic unity, and weakens global climate action and cooperation. Bullying close partners into locking in fossil fuels undercuts the very leadership Washington should offer on climate and clean energy innovation.

Instead, the Unite States should align its energy foreign policy with its citizens' need for affordable energy and rights to clean air and water. It should use diplomacy to strengthen U.S. allies and support all countries' efforts to scale renewables, improve grid infrastructure, and reduce fossil dependency and pollution.

Conclusion

New long-term LNG supply contracts are not just unnecessary; they are highly undesirable from an economic and energy security perspective. Better technological alternatives already exist and are growing quickly. But political will is needed to provide planning and certainty to mobilize the needed investments from the public and private sectors. Every U.S. dollar or euro that is invested in fossil infrastructure and new gas supplies, rather than clean technologies, forgoes spending to reduce the clean tech investment gap. These misguided investments simply finance technologies and fuels that directly displace renewables and lock in even more fossil gas consumption, along with its accompanying pollution and volatile consumer prices.

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