Global Energy Monitor

Europe Gas Tracker Report 2022

Greig Aitken, Baird Langenbrunner, and Scott Zimmerman

ABOUT GLOBAL ENERGY MONITOR

Global Energy Monitor (GEM) develops and shares information on energy projects in support of the worldwide movement for clean energy. Current projects include the Global Coal Mine Tracker, Global Coal Plant Tracker, Global Gas Infrastructure Tracker, Global Fossil Infrastructure Tracker, Europe Gas Tracker, CoalWire newsletter, Inside Gas newsletter, Global Gas Plant Tracker, Global Oil and Gas Extraction Tracker, Global Steel Plant Tracker, Latin America Energy Portal, and GEM.wiki.

ABOUT THE EUROPE GAS TRACKER

The Europe Gas Tracker is an online database that identifies, maps, describes, and categorizes gas infrastructure in the European Union and surrounding nations, including gas pipelines, liquified natural gas (LNG) terminals, gas-fired power plants, and gas fields. Developed by Global Energy Monitor, the tracker uses footnoted wiki pages to document each project and is updated annually.

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FURTHER RESOURCES

For additional data on proposed and existing gas plants, see Summary Tables on the GEM website. To obtain primary data from the GGPT, visit the Download Data page.

ABOUT THE COVER

Construction of the European Gas Pipeline Link (EUGAL) in Germany. Copyright © Paul Langrock, courtesy of the Greenpeace Media Library.

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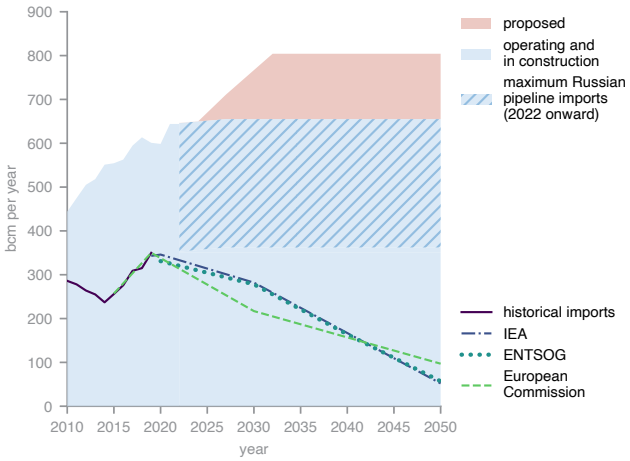
EXECUTIVE SUMMARY

Russia's invasion of Ukraine has brought about a push from EU member states, the European Commission, and the gas industry for the green-lighting of numerous new gas projects, but such an approach to Europe's energy dilemma is misplaced. The problem for Europe does not reside in a shortage of gas import capacity, but rather in the tightness of global markets.

The EU already has substantially more than enough gas import capacity—measured by operating gas pipelines and liquefied natural gas (LNG) terminals—to support the continent's needs, according to a newly updated survey by Global Energy Monitor (GEM) and its Europe Gas Tracker. Moreover, the level of surplus will grow over time. Adding additional new gas infrastructure is a slower, costlier, and more environmentally damaging answer to the bloc's security needs than accelerating the deployment of affordable renewable alternatives and demand-side reductions.

Figure ES1. EU-27 gas net imports and net import capacity

The EU has had substantial overcapacity for gas imports via pipelines and LNG terminals, and projects under construction and proposed would raise import capacity further. Even if pipeline import capacity from Russia (lined area) were not available, the bloc's import net capacity would remain in excess of demand under IEA, ENTSOG, and EU scenarios for net-zero emissions by 2050. For assumptions and sources, see Figure 3 on page 12. Data and analysis for this figure are described further in the online methodology.



KEY FINDINGS:

- Proposed new gas infrastructure projects aimed at increasing the EU's capacity for importing gas are unneeded, due to excessive existing capacity.

- Expanding the EU's gas import capacity is incompatible with the European Climate Law's requirement that gas usage be steeply reduced by 2030, and is dramatically at odds with the International Energy Agency's (IEA) Net Zero by 2050 scenario.

- The overall proposed expansion to net gas import capacity identified by GEM's Global Gas Infrastructure Tracker, a project-level database, stands at an estimated 160.2 billion cubic meters per year (bcm/y), with estimated costs of €26.4 billion (€14.1 billion from gas import pipelines, and €12.3 billion from LNG import terminals).[1] If realized, this additional capacity would result in an increase of 24.9% over the EU's current import capacity. Specifically:

  - 16 gas pipelines under construction amount to a total length of 3,200 kilometers (km) and costs of €6.5 billion. Of this, €2.1 billion is allocated to the 613-km Baltic Pipe Project, which is set to increase gas import capacity into the EU by 10 bcm/y.

  - 62 proposed gas pipeline projects in the pre-construction phase would stretch 12,500 km and cost an additional €29.7 billion. Of this, €12.1 billion would go toward building 3,600 km of import pipelines and one capacity expansion (the Trans Adriatic Pipeline), increasing gas import capacity into the EU by at least 69.5 bcm/y.

  - There are four LNG import terminals/terminal expansions under construction in the EU with known capacity of 4.3 bcm/y and costing €987 million.

  - 26 proposed LNG import terminals/terminal expansions would add 102.7 bcm/y at a cost of €11.3 billion. This does not include plans announced since February 2022 in Estonia, Germany, Greece, Italy and the Netherlands to develop floating storage and regasification units, and in Italy to revive two previously shelved LNG terminals.

1. The total reported capacity expansion in Europe Gas Tracker Report 2021 was 222 bcm/y, which included the 55 bcm/y then expected to come from the Nord Stream 2 Gas Pipeline. As the project is shelved, this report does not include that capacity.

- LNG shippers' claims of delivering "carbon neutral" cargoes do not hold up to scrutiny because of methane emissions that occur in nearly every phase of the supply chain, from extraction to transportation to bringing gas to market.
- Import capacity of 18.5 bcm/y from two terminals and one pipeline is on course to come online in 2023, adding to the EU's excess capacity. Rapid-fire announcements and mounting speculation about more than 15 new gas import and transmission projects, including expansions of existing projects, have materialized since February and Russia's invasion of Ukraine. Potential import capacity data for these projects is incomplete but is in the range of at least 70 bcm/y, according to GEM research. Only a limited number of these projects are deployable in 2022–2023, and the underlying issue which these short-term and longer-term proposals cannot solve is that Europe's gas crisis is rooted in a shortage of gas on international markets, not a deficiency in Europe's import capacity. Even if imports from Russian pipelines were removed from the system from 2022 onward, the overall import capacity of the system would remain in excess of projected net imports.

INTRODUCTION

In July 2021, the European Climate Law entered into force, mandating a 55% cut in the EU's greenhouse gas (GHG) emissions by 2030 compared to 1990 levels, with net-zero emissions to be achieved by 2050.[2] According to forecasting from the European Commission for its "Fit for 55" package of proposals, EU gas consumption should decrease 32–37% by 2030, a decrease equivalent to 100 billion cubic meters (bcm) of gas.

The 2021 gas crisis in Europe and the war in Ukraine have disrupted the EU's culture of complacency around its energy dependence on Russia, if not yet its overwhelming dependency on gas imports more generally. In its March 2022 REPowerEU proposal, the Commission noted that the EU imports 90% of its gas consumption (roughly 45% of this from Russia), and set a priority goal of shutting down Russian fossil fuel supplies "well before 2030." This rapid policy response to the war in Ukraine includes the headline short-term target of a two-thirds reduction in Russian gas reliance by the end of 2022. To achieve this, REPowerEU features an acceleration of renewables and energy efficiency measures, but it also involves an increase of 60 bcm in gas imports from non-Russian suppliers by the end of this year. To source this replacement gas, the focus of attention has turned to LNG as expanding existing pipelines into the EU, most likely from Algeria, Azerbaijan, and Norway, would take several years to complete.

As a result, the gas industry and various governments have started touting at breakneck speed a range of gas import projects, including some which are rising from the dead.

The push for still more new capacity is playing out in a context of continuing gas import overcapacity in the EU, a phenomenon which has persisted for over a decade. There is a rapidly developing risk that short-term energy security priorities will impede other efforts aimed at achieving the EU's long-term climate law targets.

Even before the invasion of Ukraine, plans for future expansion of the EU's gas import capacity stood at an estimated 160.2 bcm/y, as identified by GEM's Global Gas Infrastructure Tracker. If realized, this additional capacity would result in an increase of 24.9% over the EU's current import capacity, i.e., the EU is on track for continued excess capacity, even with the shelving of the 55 bcm/y Nord Stream 2 Gas Pipeline.

New import capacity of 11.6 bcm/y came online in 2021 (see Table 1), a marginal increase on the 10 bcm/y import capacity boost identified in 2020. Poland is set to receive 10 bcm/y of Norwegian gas when the Baltic Pipe Project starts fully operating on January 1, 2023. The Alexandroupolis LNG Terminal in Greece and the initial expansion of the Świnoujście Polskie

Table 1. Gas import infrastructure commissioned in 2021

Name	Capacity (bcm/y)
Medgaz Gas Pipeline capacity expansion	2.5
Serbian-Hungarian Gas Pipeline	6.0
HIGAS LNG Terminal	0.4
Krk LNG Terminal	2.7
Ravenna LNG Terminal	0.001
Total	**11.6**

Source: Global Energy Monitor, Europe Gas Tracker.

2. In this report, the use of 'EU' refers to the EU's 27 member states. The data underpinning the report are based on research carried out up to December 31, 2021. Minor modifications have been made up until the end of March 2022 to take account of the rapid pace of change which has affected certain gas infrastructure projects in Q1 2022. The data presented in Figure 1 and Table 3 do not include the most recent project developments which are shown in Table 4.

LNG Terminal are also on course to come online next year. Taken together, these three projects will add 18.6 bcm/y of import capacity.

In 2021, final investment decisions were taken for expansions at both the Gate LNG Terminal in the Netherlands and the Zeebrugge LNG Terminal in Belgium. The only new import terminal project to be announced across the EU in 2021 was the 2.6 bcm/y Dioriga FSRU Terminal near Corinth in Greece, which is targeting operational start-up in 2023. The Dioriga floating import terminal is a further plank in efforts to establish Greece as a gas hub for Southeast Europe (SEE).

The US Energy Association and the US Agency for International Development recently projected that by 2030 the 11 countries of SEE will require investment of US$50 billion to develop 9 gigawatts of gas-fired power generation in order to replace retired coal and lignite capacity. The US bodies arrived at this conclusion on the assumption that "other technologies are not yet ready to fill the gap"; however, recent studies by the Australian government agency CSIRO and the US energy think tank RMI have shown that by 2030 the levelized cost of firm solar and wind power, including integration and battery storage costs, will be substantially less than the cost of power from either coal-fired or gas-fired power plants.

The state of play with the EU's gas infrastructure in development is highly mixed and uncertain: three significant projects (with total capacity of 18.6 bcm/y) are due to come online in 2023, others are advancing, and the fate of the majority of the projects remains unclear, with delays being experienced at a significant rate (see the section below, and also Tables 6, 7, and 8 in the Appendix for a more detailed project breakdown). Import capacity is set to grow in the short and medium terms. But as a result of the Ukraine crisis, on top of the prevailing gas crisis in Europe, there is also now a major push underway from the gas industry and national governments for additional LNG import terminals (see the sidebar "At All Costs" on page 15).

CANCELLED, SHELVED AND DELAYED PROJECTS

Prior to February 2022, there were emerging indications that funding and building multi-decade, high-cost gas infrastructure in a decarbonizing Europe was extremely risky. Highly volatile gas market conditions in the second half of 2021 also dampened enthusiasm for several major gas projects:

- In September 2021, the Rostock LNG Terminal, a €100 million joint venture between Russia's Novatek and Belgium's Fluxys on Germany's Baltic Coast, was cancelled; the developers referred to unfavorable market conditions. There has been speculation in spring 2022 that an import terminal in the vicinity of the cancelled project will be proposed.
- In January 2022, the United States withdrew its diplomatic support for the proposed €6 billion East Med Gas Pipeline, citing "financial viability" as one of the reasons for the decision. The future of this megaproject now hangs in the balance, although it retains Project of Common Interest status from the EU for now.
- The €2.6 billion Eastring Pipeline is thought to be indefinitely postponed, though it remains listed as a priority investment for the Three Seas Initiative. The project received over €400,000 in EU grant money in 2016 and is proposed to run for more than 1,000 kilometers from Slovakia to the Bulgarian-Turkish border via Hungary and Romania.
- The decade-long plan to transport 8 bcm/y of gas through the €2.7 billion GALSI Pipeline from Algeria to mainland Italy via Sardinia has been shelved.

Significantly delayed gas infrastructure projects that are under construction or proposed, with estimated capital expenditure totalling over €7.7 billion, are shown in Table 2 on the next page. Notable among

these is the floating Cyprus LNG Terminal, which was put forward by the European Commission for inclusion on the fifth Projects of Common Interest (PCI) list and has already received €331 million in grants and loans from the Connecting Europe Facility, the European Investment Bank and the European Bank for Reconstruction and Development.

In what is being described by the *Cyprus Mail* as an "LNG debacle," the offshore project is stirring controversy in Cyprus, and its completion has been delayed until July 2023 at the earliest. This is due to contractual problems, as well as concerns that the project's Chinese contractors lack the expertise to implement it. In February 2022, a further obstacle for the project promoters emerged when toxic and radioactive chemicals were found at the project site. Cyprus does not have facilities to dispose of these chemicals, which were illegally dumped offshore.

Table 2. Delayed projects

Projects included on the fifth PCI list are marked by ‡ (European Commission 2021).

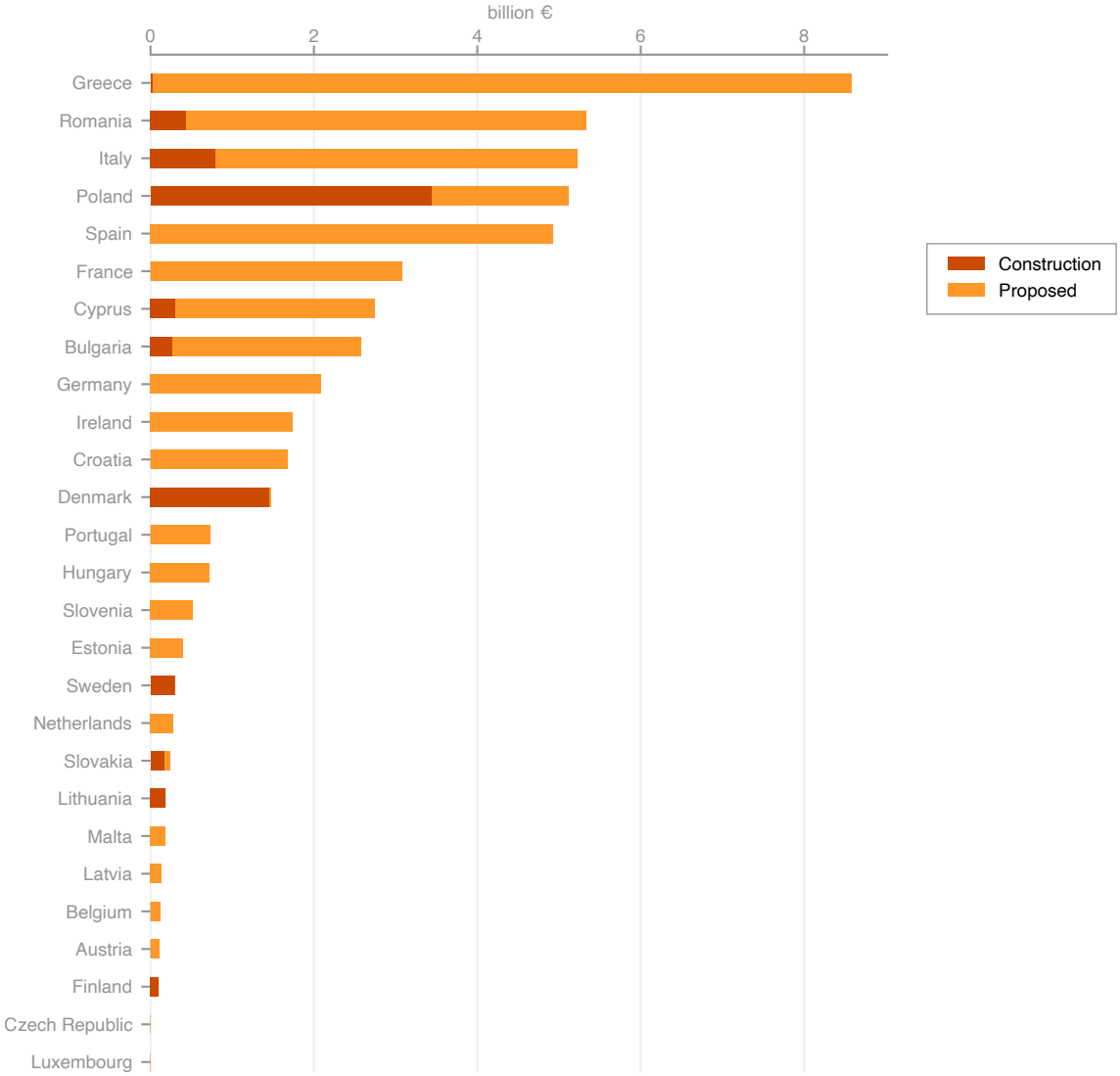
Name	Countries	Est. cost (million €)	Delay in start dates, and status where known
Pipelines			
Black Sea Shore-Podisor Gas Pipeline ‡	Romania	360	From 2020 to 2022/2023
Celorico-Spanish Border Gas Pipeline	Portugal	115	From 2022 to 2025; no reported construction start
Interconnector Greece Bulgaria ‡	Bulgaria, Greece	240	From 2021 to 2022; in doubt
Ionian Adriatic Gas Pipeline (IAP)	Albania, Montenegro, Croatia	586	2025; reported to be behind schedule with no construction start
Methanization of Sardinia Project	Italy	600	From 2021 to 2025
Onești-Gheraesti-Letcani Gas Pipeline	Romania	131	2021; no reported construction start
Poland-Ukraine Interconnector	Poland, Ukraine	160	2022; no reported construction start
White Stream Gas Pipeline	Georgia, Romania	4500	From 2018 to 2024; no reported construction start
LNG terminals			
Cyprus LNG Terminal ‡	Cyprus	312	From 2021 to 2023; reported construction difficulties
Shannon LNG Terminal	Ireland	650	From 2022 to unknown; proposed
Skulte LNG Terminal	Latvia	110	Planned for 2024; still proposed
Total (pipelines and LNG terminals)		**7764**	

Source: Global Energy Monitor, Europe Gas Tracker. More details in the report methodology online.

PROJECT COSTS

The total estimated cost of EU gas infrastructure expansion under development is €48.6 billion (see Figure 1 and Table 3). Of this, €14.1 billion is for pipelines meant to import gas into the EU (see Table 6 in the Appendix), and €12.3 billion is for LNG import terminals[3] (see Table 7 in Appendix). The remaining €22.1 billion is for additional non-import pipelines that will transport gas within EU borders or export it (see Table 8 in the Appendix). Given the commitments undertaken by EU member states to substantially reduce their use of fossil fuels, a significant portion of these assets are at risk of becoming stranded or underutilized should these projects proceed.

Figure 1. Estimated cost of future EU gas pipelines and terminal by country



Source: Global Energy Monitor, Europe Gas Tracker. Costs of pipeline segments and LNG terminals in development within EU borders. See the online methodology for more information.

3. As of March 2022, there were no LNG terminals planned purely for LNG export that were in construction or proposed in the EU.

Table 3. Future gas infrastructure in EU countries (under construction or proposed)

Country	Pipeline length (km)	Pipeline cost (million €)	LNG import capacity (bcm/y)	LNG terminal cost (million €)	Total cost (million €)
Austria	28	106			106
Belgium			8.2	116	116
Bulgaria	1,766	2,574			2,574
Croatia	869	1,198	4.4	479	1,677
Cyprus	832	2,436	0.8	312	2,748
Czech Republic					
Denmark	424	1,454	0.1	13	1,467
Estonia			2.5	400	400
Finland			0.1	100	100
France			10.6	3,077	3,077
Germany			30.0	2,086	2,086
Greece	2,319	7,995	8.7	590	8,585
Hungary	461	725			725
Ireland	26	89	11.5	1,648	1,737
Italy	1,632	5,227			5,227
Latvia	32	26	6.2	110	136
Lithuania	165	184			184
Luxembourg					
Malta	71	182			182
Netherlands			1.5	277	277
Poland	1,878	3,919	9.4	1,195	5,113
Portugal	321	730			730
Romania	2,948	3,821	8.2	1,509	5,330
Slovakia	137	239			239
Slovenia	496	517			517
Spain	1,242	4,529	5.0	398	4,927
Sweden	86	296			296
Total	**15,732**	**36,246**	**107.0**	**12,309**	**48,555**

Source: Global Energy Monitor, Europe Gas Tracker. An average pipeline cost of €3.42 million per kilometer is assumed for the EU; capacity expansion projects, where no new pipeline kilometers are built, are not included in these cost estimates. Costs for LNG terminals per unit rate of volume transport are differentiated for floating and onshore terminals. For floating terminals, a cost of €102.38 million per bcm/y capacity is used; for onshore terminals, a cost of €184.88 million per bcm/y capacity is used. For more details, see the report methodology online and tables in the Appendix.

THE FUTURE OF EU GAS CONSUMPTION AND IMPORTS

Future EU gas consumption

Projections for EU gas consumption have undergone a triple reality check as a result of the ongoing gas price crisis, the Russian invasion of Ukraine, and new warnings from the UN's Intergovernmental Panel on Climate Change (IPCC) about the catastrophic role that methane emissions are playing in the climate crisis. In 2021, rampant spikes in prices and consumer bills resulted due to the EU's excessive dependency on imports as global gas markets went into convulsions. The kicker to do something about this is the crisis in Ukraine.

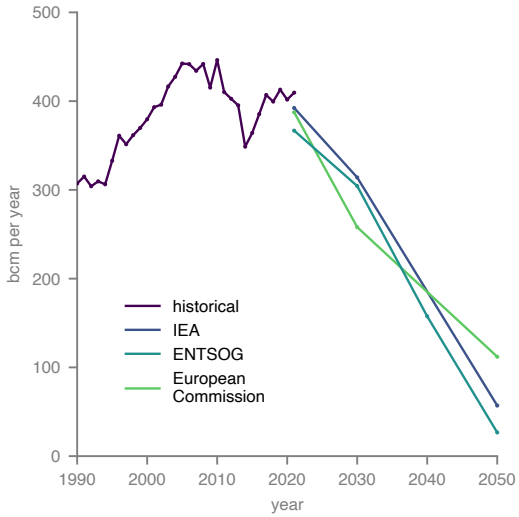
The European Commission has put forward proposals to slash the EU's 40% dependency on Russian gas by two-thirds by the end of 2022, a reduction of ~100 bcm, and to fully decouple from Russian imports by 2030 at the latest. EU member states have committed to a phaseout of Russian imports "as soon as possible." A final end date—some point between 2027 and 2030—may be decided in May this year, but the level of political will and unity on the matter appears to be high.

Gas supply diversification efforts, under the REPowerEU proposals, will need to deliver 60 bcm of non-Russian gas by the end of this year, while demand-side reductions totalling 38 bcm are also required. Independent think tanks have provided analysis showing that by accelerating the deployment of renewable electricity, energy efficiency and electrification, the EU can stop using Russian gas as early as 2025 without building new fossil gas infrastructure, or interrupting coal and nuclear phaseout plans.

Meanwhile, the overarching third reality check for the EU's use of gas—climate change—becomes ever more dire. The February 2022 report from the IPCC warned that the threat posed by climate change to human well-being and the health of the planet is "unequivocal," with over 40% of the world's population now "highly vulnerable" to the effects of atmospheric heating. The IPCC's April 2022 report found that emissions from methane, which makes up 70-90% of gas, must be reduced by 34% in 2030 if the world is to limit warming to 1.5°C. The achievement of net-zero GHG emissions by 2050, enshrined in EU Climate Law, therefore requires deep cuts in the bloc's consumption of unabated gas. The low-emissions scenarios in Figure 2 all show the direction of travel required for cutting gas consumption across the EU and the considerable distance which remains.

Significantly, the Commission's scenarios (published in 2020) for achieving net-zero emissions by 2050 now outpace the International Energy Agency (IEA) Sustainable Development Scenario (SDS) and scenarios from the European Network of Transmission System Operators for Gas (ENTSOG) only on achieving the interim target of reducing emissions 55% by 2030. These latest IEA and ENTSOG scenarios anticipate faster and deeper cuts in gas use from approximately 2035 onwards.

Figure 2. Historical consumption and future scenarios for EU-27 fossil gas



Sources: Historical data (purple line) show EU natural gas consumption combined from the European Commission's statistical pocketbook and country datasheets and the Eurostat database. IEA scenario (dark blue line) shows projected consumption for the Sustainable Development Scenario from the World Energy Outlook 2021. European Network of Transmission System Operators for Gas (ENTSOG, light blue line) is the average of two low-emissions scenarios in Figure 27 of the Ten Year Network Development Plan 2022. European Commission scenario (green line) portrays the average of three scenarios achieving 55% emissions reductions by 2030, from the 2030 Climate Target Plan.

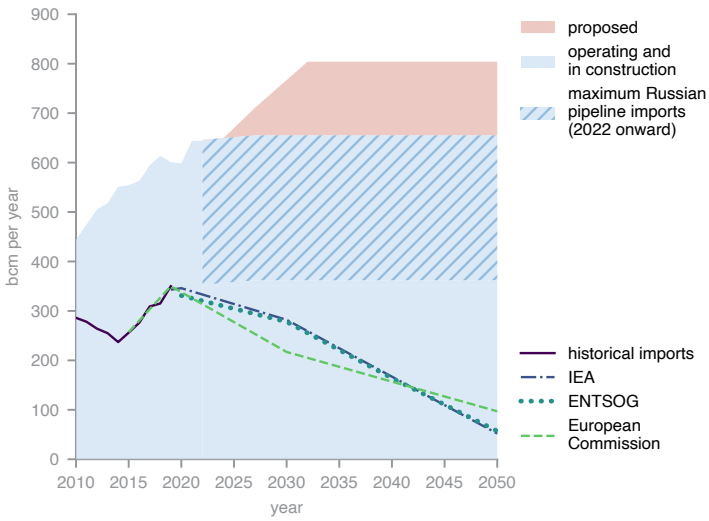
In terms of climate ambition, the IEA's SDS was overtaken in May 2021 by the agency's publication of its Net Zero Emissions by 2050 (NZE) pathway, which foresees global gas consumption falling 55% by 2050.[4] As a developed region, the EU needs to make a faster transition away from gas than the global 55% reduction, according to the NZE pathway; the carbon intensity of electricity grids in advanced economies, such as the EU, should be net-zero by 2035, according to the NZE. With respect to methods of gas transportation, the IEA states that, between 2020 and 2050, "natural gas traded as LNG falls by 60% and trade by pipeline falls by 65%." The report concludes, "Given the rapid decline of fossil fuels, significant investment in new oil and gas pipelines are not needed in the NZE."

Future EU gas imports

According to the European Commission, the EU imports 90% of its gas consumption. Figure 3 shows the EU's large, historic excess gas import capacity, which is set to increase further if gas infrastructure projects under construction and proposed are all completed. The logic of this scale of capacity expansion is undermined by the EU Climate Law's mandate requiring a 55% reduction in emissions by 2030, and net-zero emissions by 2050.

The lined area in Figure 3 also shows the maximum technical capacity for pipeline imports from Russia into the EU, based on an aggregate of cross-border interconnections along the EU's eastern border provided by ENTSOG's Europe Natural Gas System 2021 map. This calculation makes the conservative assumption that all pipelines on the EU's eastern border transport gas of Russian origin. While it does not consider exports from the EU or balancing issues within the EU, the lined area

Figure 3. EU-27 gas net imports and net import capacity



Source: Blue and pink shading shows historical and future natural gas import capacity (pipelines and LNG terminals in the EU) from Global Energy Monitor's Europe Gas Tracker. Historical data (purple line) show EU natural gas imports from ENTSOG transmission capacity maps for 2010–2021. IEA scenario (light blue line) shows inferred net import needs, calculated as the difference between projected demand and EU production for the Sustainable Development Scenario from the World Energy Outlook 2021. ENTSOG (blue dotted line) shows the average gas import projections of two low-emissions scenarios in Figure 31 of the Ten Year Network Development Plan 2022. European Commission scenario (green broken line) portrays the average natural gas imports of three scenarios achieving 55% emissions reductions by 2030 from the EC's 2030 Climate Target Plan. The lined area represents the maximum technical capacity for pipeline imports from Russia into the EU, based on an aggregate of pipeline interconnections along the eastern border of the EU using ENTSOG's Europe Natural Gas System 2021 map. These calculations assume no retirement of currently operating infrastructure and no new project development beyond what is currently announced. Data and analysis for this figure are described further in the online methodology.

4. Unlike for its Sustainable Development Scenario, the IEA has yet to release the regional data breakdown—including for the EU27—underpinning its Net Zero Emissions by 2050 Scenario.

suggests that there is sufficient import capacity into the EU without relying on Russian pipeline gas. (For additional notes on balancing issues, see the online methodology.) In addition, the gap between capacity and imports grows over time under the Sustainable Development Scenario in the IEA's World Energy Outlook 2021, ENTSOG's Ten Year Development Plan 2022, and the EU's 2030 Climate Target Plan.

In economic terms, adding to import capacity does not make sense when the prevailing challenge for the EU and the rest of the world is not enough availability of gas on global markets. In March 2022, Bloomberg New Energy Finance concluded that, with 70% of LNG supply locked into long-term contracts, "there is currently not enough supply in the global LNG market to support 50 bcm of additional European LNG imports. This would push global LNG markets into undersupply and provide strong structural price support for global LNG and linked gas prices."[5] In its LNG Global Supply & Demand Outlook for 2022, the energy consultancy ICIS also argued that supply-tightness and price volatility are set to become a commonplace feature of global gas markets.

EUROPE'S MULTI-FACETED GAS CRISIS

Russia's invasion of Ukraine has provoked a radical energy policy response from EU member states and the European Commission, a response long overdue to shake off the bloc's structural dependency on fossil fuel imports from Russia. The near-term focus on the Ukraine crisis should not blur the fact that a historic, gas-driven energy price crisis gripped Europe in the eight months leading up to the war in Ukraine.

Historic spikes in gas prices, which in December 2021 saw the European benchmark for gas prices peak at a level 850% higher than the beginning of the year, led to a resurgence of criticism of EU climate policy for supposedly preferencing renewable energy at the expense of gas infrastructure investments. Such criticism overlooked the billions in EU public funding support for new gas pipelines and LNG terminals in recent years, as previously identified by GEM. It also ignored the reality that the basis of high gas prices in Europe was a shortage of gas on international markets, not a deficiency in Europe's import capacity. An analysis of Gas Infrastructure Europe data by Food and Water Watch Europe has shown that the average utilization rate of large-scale LNG import terminals operating in the EU and the UK was just over 40% for the period January 2021 to mid-January 2022, although regional and seasonal variations in terminal utilization rates exist across the continent.

Supply limitations, caused by a perfect storm of external factors in various key regions throughout 2021, overlapped with an abrupt rebound in gas demand as economies recovered from the Covid-19 pandemic. In various statements, the IEA identified the reasons behind the price turbulence. Executive Director Fatih Birol summarized the IEA's view at the beginning of 2022: "This is not a renewables or a clean energy crisis; this is a natural gas market crisis."

As the events of the gas price crisis since mid-2021 have shown, Europe's excessive import capacity has not spared it from the effects of skyrocketing prices. Building out more gas import infrastructure would not only run contrary to the EU's climate targets and be hugely expensive, it would also not be able to overcome two fundamental realities: a lack of gas supply and baked-in price volatility as the global transition to cheaper renewable energy accelerates.

There is strong consensus among gas analysts that not only is supply tight now, it will remain so in the longer term. There is limited uncontracted LNG supply available through to 2025, with Asian markets—especially China—having signed numerous long-term contracts at the tail end of 2021, primarily with a few, yet to be built US terminals that will only be able to send out liquid fracked gas in three to four years' time at the earliest. European gas buyers are further constrained

5. BloombergNEF. "Europe Plans Break From Russian Gas." March 14, 2022.

by the EU's net-zero emissions reduction targets that ought to rule out the signing of long-term, 10–20 year LNG supply contracts. Europe will likely have to rely increasingly on spot market pricing that involves not only competing with Asian buyers but also being exposed to price volatility of the kind dramatically seen in 2021, or potentially even worse.

The politics of panic

Russia's invasion of Ukraine is reshaping European energy policy in two very different ways. In the short term, Europe's gas shortage is complicating efforts to wean the world off Russian gas, though an EU plan to end Russian imports has been set in motion. In the long term, Russia's aggression is certain to motivate the EU to accelerate its shift towards domestic renewables and long overdue, deep cuts in energy consumption.

However, the atmosphere of crisis that now surrounds European gas policy has the potential to lead to mistaken decisions over short- and long-term import capacity expansion, particularly if the gas industry chooses to exploit the situation to its own benefit. Such exploitation must not be tolerated by EU member states, the Commission, and European society, who have all seen utility bills soar in the last nine months as gas producers have raked in huge profits.

Even before the outbreak of war, in late 2021, Europe's high gas prices had created an atmosphere of panic, with press reports of an "armada" of US LNG tankers being diverted from Asian markets towards import terminals in Belgium, the Netherlands, the UK and elsewhere to rescue the continent from its "gas gap." The sense of panic was heightened yet further by the threat of another disturbance in gas supplies to Europe, made real by Russia's invasion of Ukraine. In January and February, the EU and the US embarked on shuttle gas diplomacy aimed at securing supplies in the event of disruption from Russia. A joint US-EU statement on energy security cooperation, aimed at anchoring these efforts, committed to "make available reliable, and affordable energy supplies to citizens and businesses in the EU and its neighbourhood." This commitment will now be tested.

Concerns that the crisis atmosphere would be seized upon by the gas industry have been confirmed by the fact that at least 15 major gas import and pipeline projects have risen from the dead, come out of left field, or seen rapid-fire announcements of capacity expansion (see the sidebar "At All Costs" on page 15).

"Carbon-neutral LNG" remains a marketing slogan

The gas industry is increasingly desperate to counter the findings of the IPCC and others that gas emissions are catastrophic for the climate. High levels of methane and CO_2 emissions come from all stages of the export supply chain: gas exploration and production, transportation to the LNG plant, liquefaction, shipping, regasification, and end use. In a sectoral outlook for 2022 and beyond, the energy consultancy Wood Mackenzie notes that LNG developers will have to "respond to calls for greater transparency and certification around carbon emissions (despite there still being no industry standard for this)." The LNG industry has started to respond to states' introduction of net-zero targets and to growing sensitivities in key markets such as Europe over emissions-intensive LNG, but its efforts so far to provide a "carbon-neutral" product—despite loud marketing claims—are reminiscent of its attempts to promote gas as a "bridge fuel" to a renewable energy future.

Carbon capture and storage (CCS) facilities are being proposed at a number of slated LNG export terminals, particularly in the US. Fundamental doubts over the viability of CCS combining with LNG persist as the capture of CO_2 produced during the liquefaction process can only address, at best, about 8–10% of the full life-cycle emissions of LNG. LNG and CCS in action, as evidenced by Chevron's efforts to capture CO_2 at its

AT ALL COSTS: INDUSTRY AND GOVERNMENTS MAKE CRISIS LURCH FOR EVEN MORE IMPORT INFRASTRUCTURE

In mid-March, Italy's minister for ecological transition, Robert Cingolani, told the *Financial Times*, "We are working like crazy for diversifying gas sources." This is reflective of the activities—featuring joint governmental–LNG industry collaborations—which have burst into view in several EU member states in the current drive to promote the development of additional LNG import capacity infrastructure.

Steep reductions in Russian gas dependency is the justification for this stampede of project proposals that includes some new projects, as well as some that were either cancelled or stalled at the beginning of 2022. The overarching LNG import overcapacity currently available in the EU is not being mentioned in this crisis-driven rush, nor are spiraling costs in labour, steel, aluminium and other essential materials for new terminal buildout that are likely to result from supply chain bottlenecks and price inflation.

Table 4 shows the split between onshore terminals and offshore floating storage and regasification units (FSRUs) reported to be potential new projects since mid-February. Onshore terminals such as Gioia Tauro and Porto Empedocle in Italy have been revived, having until very recently been shelved projects. Such has been the length of time since they were first proposed (as far back as 2005 in the case of Gioia Tauro), their promoters' talking up of new plans has to be seen in the context of outdated environmental and planning permissions, as well as expected opposition from communities and activists.

FSRU projects are prominent, with industry speculation of six new FSRUs being ready across the EU by this winter. The speed at which FSRUs can be developed (typically one to three years, depending on capacity size and whether vessels are chartered or newly commissioned) is being viewed as a major plus point. The last FSRU to commence operations in the EU, the relatively small, 2.6 bcm capacity Krk LNG Terminal in Croatia, took just over a year to build and commission in January 2021 after receiving over €200 million in public funding support. It remains unclear, though, if EU governments will be able to deploy FSRUs at the speed being suggested, and their promoters will have to contend with very tight gas supply in the short- to medium-term at least.

Included in this report's overall dataset, but not in Table 4, is another FSRU proposal at Wilhelmshaven (a 10 bcm/y

Table 4. EU gas crisis: LNG import terminal proposals and developments, February to March 2022

Name	Country	Project type	Status	Capacity (bcm/y)	Est. cost (million €)	Government backing	Start date
Paldiski FSRU Terminal	Estonia	FSRU	Proposed	–	500	Yes	2022
Rostock LNG Terminal	Germany	Unknown	Cancelled in 2021, new project in the area is being revived	–	–	Unknown	Unknown
Uniper Wilhelmshaven LNG Terminal	Germany	Onshore LNG terminal	Proposed	20	–	Unknown	2025
TES Wilhelmshaven LNG Terminal	Germany	Onshore LNG terminal	Proposed	10	–	Promoter is seeking government backing	2025
Argo FSRU Terminal	Greece	FSRU	Proposed	4.6	226.5	Yes	2023
Thrace FSRU Terminal	Greece	FSRU	Proposed	5.5	–	Unknown	Unknown
Gioia Tauro LNG Terminal	Italy	Onshore LNG terminal	Shelved to Proposed	12.00	1000	Yes	2026 (potentially)
Porto Empedocle LNG Terminal	Italy	Onshore LNG terminal	Shelved to Proposed	8.20	650.00	Yes	Unknown
At least two new FSRUs	Italy	FSRU	Proposed	10 (minimum)	–	Yes	One by Q3, 2022
Eemshaven FSRU Terminal	Netherlands	FSRU	Proposed	4	300	Yes	Q3, 2022
Gate LNG Terminal	Netherlands	Onshore LNG terminal	Proposed expansion capacity	5–8	–	Yes	Unknown

project). Having been cancelled in 2021, it was reborn in February as a project to be fast-tracked with German federal government backing and financial support, a status also granted to the Brunsbüttel LNG Terminal (8 bcm/y). Lower Saxony's Energy Minister, Olaf Lies, is committed to the rebirth of Wilhelmshaven. Lies said, "We can manage to start landing liquid gas as early as 2024. To do this, we have to take planning shortcuts wherever and whenever possible." A commercial law firm in Hamburg has, however, outlined the "Herculean task" which lies ahead for the Wilhelmshaven and Brunsbüttel proposals to overcome highly complex approval procedures, as well as challenges in the courts and from campaigners.

Other projects which have recently seen notable indications of renewed momentum include:

- Skulte LNG Terminal (6.2 bcm/y) in Latvia—government overtures to Canada for LNG supplies.
- Paldiski LNG Terminal (2.5 bcm/y) in Estonia—signals from the government and the gas sector that the project can advance with state funding, but only once Estonia decides to stop importing Russian gas.
- Midi–Catalonia Pipeline in Spain and France—the 1250-km pipeline was cancelled in 2019, but the Spanish government is calling for it to be revived and financed with EU public money.

Taken together, this astonishing array of projects has sprung up in the space of six weeks, and could result in yet more import capacity for the EU over and above existing overcapacity. With its REPowerEU proposals, which have involved limited modelling, the European Commission has set some EU governments racing to lock in further gas supply for up to 20 years or more, when they should be focusing their efforts more squarely on decreasing domestic gas consumption.

US$55 billion Gorgon LNG Terminal in Australia (one of only two such facilities currently operating around the world), has been near disastrous. Since its inception in 2017, the CCS project continues to be mired in technical, economic, and regulatory difficulties. Chevron has had to pay out over US$170 million for carbon offsets to compensate for failing to bury 9.5 million tonnes of CO_2 in the Gorgon terminal's first five years of operation.

Frameworks for the transparent measurement, reporting, and verification (MRV) of GHG emissions from LNG cargoes emerged in 2021, including from the International Group of Liquefied Natural Gas Importers in November. Transparency is vital, as the carbon offsetting that LNG shippers have relied on to announce delivery of "carbon neutral cargoes" has been notably opaque and questionable to date. In an analysis of these fledgling frameworks, the Oxford Institute for Energy Studies has warned: "[W]ithout empirical MRV of emissions from these cargoes and much more transparency about the process, the credibility of GHG-related claims associated with LNG trade is open to serious question."

NEW TEN-E REGULATION: DOOR OPENS TO HYDROGEN BLENDING, GAS RELICS CLING ON

A provisional agreement was reached in December 2021 between the European Council, European Parliament, and European Commission on the revision of the Trans-European Networks for Energy (TEN-E) Regulation. Formal adoption of the revisions is expected in the second quarter of 2022. Among other things, this will see an end to EU public funding for new gas infrastructure, though the outcome of the TEN-E negotiations in Brussels has been to produce a new regulation more friendly to gas than the Commission's original proposals intended.

In tandem with proposals put forward by the Commission aimed at redesigning the EU's internal gas market rules and establishing a pan-European hydrogen market and pipeline network, the so-called "Fit for 55" package, the TEN-E regulation coming into force will now give priority status and financial assistance to the development of hydrogen corridors. This will apply for a transitional period up to the end of 2027, within which time gas infrastructure can be repurposed to transport and store (bio)methane and hydrogen blends.

Concerns have been raised that these proposals to blend "green" low-carbon hydrogen or more carbon-intensive "blue" hydrogen in gas networks provide a lifeline to the EU's transmission system operators who control gas pipelines. These concerns are supported by numerous recent studies which have outlined the marginal benefits and huge squandered opportunities if hydrogen blending were to take off.

Among these, the Agora Energiewende think tank estimates that a 20% renewable hydrogen blend would raise the price of wholesale gas by 33% but reduce emissions by only 7%. A January 2022 study by the Fraunhofer Institute for Energy Economics and Energy System Technology recommends the avoidance of "sub-optimal" hydrogen blending that—based on a potential 20% green hydrogen mix entering the gas grid—it calculates would increase costs for households by an average of 11.2% across the EU. Instead, Fraunhofer argues for policy to focus on delivering hydrogen to "no-regrets" sectors such as fertilizers, steel, shipping and aviation, that "would avoid lock-in risks, generate greater GHG savings for the investments made and avoid added costs being put on all gas consumers."

The new TEN-E regulation will continue to govern future priority trans-European energy infrastructure via the selection of projects to be designated as projects of common interest. "Sustainability" will be added as a mandatory criterion for all PCIs and oil and gas projects will no longer be eligible for PCI status.

The Three Seas Initiative

Another European arena in which new gas and hydrogen infrastructure is being promoted is the Three Seas Initiative (3SI), a regional economic cooperation forum involving the 12 EU member states of central and eastern Europe. Currently 18 major gas infrastructure projects and two hydrogen projects are showcased for development and financial backing under the initiative, compared to eight renewable energy projects. To date, the only 3SI investment in the energy sector has gone to an Austrian solar developer in May 2021.

However, the revamped TEN-E will have no bearing on the fifth PCI list unveiled by the Commission in 2021 and approved by the European Parliament in March this year. European campaign groups called for a rejection of the fifth PCI list in its entirety, arguing that it is inconsistent with—if not governed by—the revised TEN-E regulation which has recognised the need to exclude gas from EU special treatment and financial support. Voting in the European Parliament saw 177 members reject the new PCI list, while 497 supported it, with 20 abstentions.

Among the 98 projects on the fifth list are 30 gas projects with total costs of €13 billion. The greenlighting of the 5th PCI list provides the option of faster permitting procedures for the chosen projects, including the Cyprus LNG Terminal, the East Med Gas Pipeline, the Malta-Italy Gas Pipeline, and the Polish Baltic Sea Coast Terminal.

Inclusion of the so-called "Melita" pipeline linking Malta to Sicily in particular has raised eyebrows. Lobbying by the Maltese government has stressed that the pipeline will be hydrogen-ready. Of more immediate concern is the fact that Melita is linked to an individual charged in connection with the murder of the investigative journalist Daphne Caruana Galizia in 2017. In an unprecedented move, which may have application in the event of future convictions in the criminal case, the negotiated text on the TEN-E revision includes a paragraph stating that EU funding should not be granted to corrupt or illegal projects.

A December 2020 report commissioned by the Hungarian government on Danube Region energy planning referred to the "astoundingly long" list of gas projects planned for implementation by 2030. This is in spite of various countries' announced intentions to reduce gas consumption by 2030. The report's authors predict that these projects will not ultimately materialize, and should instead be viewed as long-standing investment proposals still lingering on planning lists after failed efforts to tap European public financing.

EU REGIONAL BREAKDOWN

Table 5. Future gas infrastructure (pipelines and LNG terminals) by EU region[6]

Pipeline costs are attributed to the regions in which the pipelines have been or would be laid. Import capacities are for imports into each region.[7]

	Construction		Proposed	
	Cost (million €)	Import capacity (bcm/y)	Cost (million €)	Import capacity (bcm/y)
Western EU	0	0.0	7,204	61.7
Eastern EU	925	13.3	4,795	65.8
Southern EU	312	0.8	11,369	34.7
Northern EU	1,850	0.1	13	0.1

Eastern EU

With just over 79 bcm/y of capacity under construction or proposed, the eastern EU region has the highest gas import capacity expansion planned. Despite environmental impact concerns causing delays in the construction of the Baltic Pipe Project in Denmark (10 bcm/y capacity), this pipeline connecting Poland to Norway's gas fields is expected to be completed in the fourth quarter of 2022. The major White Stream Gas Pipeline (32 bcm/y capacity) across the Black Sea to Romania shows no sign of development in spite of a mooted 2024 start date.

Five LNG import terminals are proposed across the eastern EU region, with the Polish Baltic Sea Coast Terminal (6 bcm/y capacity) one of only two LNG terminals to be included in the fifth PCI list. The Tallinn LNG Terminal is now classed as shelved by GEM owing to no project development updates for more than four years. The Paldiski LNG Terminal and the Skulte LNG Terminal remain on the drawing board in the Baltic region and are also priority projects for the Three Seas Initiative. The rationale for these

Figure 4. Eastern EU

Pipelines are shown as lines and LNG import terminals as circles. Other than the projects named in the legend, those under construction are shown in red and those that are proposed are in orange.

6. **Western EU**: Ireland, France, Belgium, Netherlands, Luxembourg, Germany, Austria. **Eastern EU**: Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Slovenia, Croatia, Hungary, Romania, Bulgaria. **Southern EU**: Portugal, Spain, Italy, Malta, Greece, Cyprus. **Northern EU**: Sweden, Finland, Denmark.

7. The import capacities for each EU region do not sum to the total of the import capacity for the EU as a whole: gas can be imported into one EU region and then carried by pipeline to another region within the EU.

projects is questionable as the three Baltic states are seeing declining demand for gas, more than in any other region in the EU, and the existing Klaipėda LNG Terminal in Lithuania—which receives fracked gas from the US—is underutilized. It had an average utilization rate of 35% in 2021.

Western EU

Until Russia's invasion of Ukraine in February 2022, more than half of western EU's future gas import capacity expansion had been tied up with the destiny of the Gazprom-led Nord Stream 2 Gas Pipeline (NS2), construction of which was completed in September 2021. In immediate reaction to the start of the military conflict, the German government took steps to indefinitely block NS2's certification process, while the US government slapped additional, more severe sanctions on the project. The pipeline's sponsoring company is said to be facing insolvency, and four major investors—including Shell—have announced their withdrawal from the €9.5 billion project. NS2 is not officially cancelled, but GEM's Global Gas Infrastructure Tracker has classified the project as shelved.

The proposed LNG import terminals in the western EU are split between expansion projects in Belgium, France, and the Netherlands and new start-ups in Germany and Ireland. Of the latter, potentially involving an additional 40 bcm/y of capacity, German and Irish campaigners, with support from international anti-gas advocates, have succeeded in delaying the projects for some years including via court victories. In Ireland, the future of the Predator FSRU Terminal and the Shannon LNG Terminal now hinge on the outcome of a governmental review of the country's security of energy supply due in July 2022.

Figure 5. Western EU

Proposed LNG import terminals are shown as orange circles.

Southern EU

Southern EU has 35.5 bcm/y of gas import capacity under construction or proposed. Up to 20 bcm/y of this total would potentially come from the East Med Gas Pipeline, a long-touted proposal to build a 1,900-km subsea pipeline that would supply Europe with gas from Israeli and Egyptian offshore fields via Cyprus and Greece.

Withdrawal of support in January this year for the project from the US, now believed to be favouring electricity connections for linking East Mediterranean countries to each other and to Europe, may have sounded the death knell for East Med. The ramifications of this for the connection to the proposed Poseidon Gas Pipeline are unclear. Caspian gas flows of 10 bcm/y started entering the EU in 2021 through the Trans Adriatic Pipeline. Depending on market demand, a proposed doubling of the pipeline's capacity can take place incrementally within four to five years, according to the TAP company.

A final investment decision was taken for the Alexandroupolis LNG Terminal (6.1 bcm/y capacity) in January 2022, and an additional import terminal for Greece—the Dioriga FSRU Terminal (2.6 bcm/y capacity)—was also announced in 2021. The Porto Empedocle LNG Terminal (8.2 bcm/y), proposed for development close to Sicily's most famous Greek temples and originally slated to commence operations in 2015, may still proceed according to the Italian energy company Snam. Currently, GEM's Global Gas Infrastructure Tracker assesses the project as shelved, while the Tenerife LNG Terminal (1.3 bcm/y capacity) is deemed to be cancelled due to inactivity following negative rulings for the project from Spain's Supreme Court in 2015 and 2018.

Northern EU

Northern EU has negligible future gas import capacity planned, with the small-capacity Hamina LNG Terminal in Finland (0.1 bcm/y) under construction, and two other small LNG terminals in Denmark and Finland in the proposal stage. Most of the costs assigned to the northern EU region are for the Baltic Pipe Project which passes through the waters of Denmark and Sweden.

Figure 6. Southern EU

Pipelines are shown as lines and LNG import terminals as circles. Other than the projects named in the legend, those under construction are shown in red and those proposed are in orange.

APPENDIX

Table 6. Planned pipelines to import gas into the EU

Only sections within EU countries are listed. Projects included on the fifth PCI list are marked by ‡ (European Commission 2021).

Country	Pipeline name	Capacity (bcm/y)	Length (km)	Cost (million €)
Construction				
Denmark	Baltic Pipe Project‡	10	424	1,454
Poland			102	350
Sweden			86	296
Construction Subtotal		**10**	**613**	**2,100**
Proposed				
Bulgaria	White Stream Gas Pipeline	32	160	546
Romania			118	405
Bulgaria	North Macedonia–Bulgaria Gas Pipeline		5	1
Bulgaria	Macedonia-Bulgaria Interconnector Gas Pipeline		30	101
Croatia	Bosnia and Herzegovina–Croatia South Interconnection Gas Pipeline	1.5	62	213
Croatia	Ionian Adriatic Gas Pipeline	5	264	286
Cyprus	Anamur to North Cyprus Gas Pipeline		42	144
Cyprus	Israel Cyprus Gas Pipeline	1	152	217
Cyprus	East Med Gas Pipeline (with expansion)‡	20	1,293	4,148
Greece		10	571	1,833
Italy, Greece	Trans-Adriatic Gas Pipeline (capacity expansion)*	10	–	1,035
Romania	Gheraesti-Siret Gas Pipeline		145	124
Spain	Nigeria-Morocco Gas Pipeline		617	2,390
Portugal			159	615
Proposed Subtotal		**69.5**	**3,617**	**12,059**
Total			**4,230**	**14,159**

* The Trans-Adriatic Gas Pipeline capacity expansion involves new compressor stations but no new pipeline kilometers, and it carries an estimated cost of €1.035 billion. This cost is combined for Italy and Greece in this table and is split evenly across these two countries elsewhere.

Table 7. Planned EU LNG import terminals

Projects included on the fifth PCI list are marked by ‡ (European Commission 2021).

Country	Terminal name	Capacity (bcm/y)	Cost (million €)
Construction			
Cyprus	Cyprus LNG Terminal‡	0.8	312
Finland	Hamina LNG Terminal	0.1	100
Poland	Świnoujście Polskie LNG Terminal Expansion	2.5	427
Poland	Świnoujście Polskie LNG Terminal Expansion 2	0.8	148
Construction Subtotal		4.3	987
Proposed			
Belgium	Zeebrugge LNG Terminal, 2024 Expansion	6.4	116
Belgium	Zeebrugge LNG Terminal, 2026 Expansion	1.8	450
Croatia	Krk LNG Terminal Phase 2	4.4	479
Denmark	Frederikshavn LNG Terminal	0.1	13
Estonia	Paldiski LNG Terminal	2.5	400
Finland	Rauma LNG Terminal		
France	Fos Cavaou LNG Terminal Expansion 1	2.7	1,571
France	Fos Cavaou LNG Terminal Expansion 2	5.4	1,006
France	Montoir LNG Terminal Expansion	2.5	500
Germany	Brunsbüttel LNG Terminal	8	450
Germany	Stade LNG Terminal	12	1,000
Germany	Wilhelmshaven FSRU Terminal	10	636
Greece	Alexandroupolis LNG Terminal	6.1	290
Greece	Dioriga FSRU Terminal	2.6	300
Ireland	Predator FSRU Terminal	3.3	
Ireland	Shannon LNG Terminal Phase I	2.8	650
Ireland	Shannon LNG Terminal Phase II	2.1	388
Ireland	Shannon LNG Terminal Phase III	3.3	610
Latvia	Skulte LNG Terminal	6.2	110
Malta	Delimara Onshore LNG Terminal		
Netherlands	Gate LNG Terminal Expansion	1.5	277
Poland	Polish Baltic Sea Coast Terminal ‡	6.1	620
Romania	Constanta LNG Terminal	8.2	1,509
Spain	Gran Canaria LNG Terminal	1.4	272
Spain	Mugardos LNG Terminal Expansion	3.6	36
Proposed Subtotal		102.7	11,322
Total		**107.0**	**12,309**

Table 8. Future gas pipelines within the EU

Only pipelines that begin and end in the EU, and are 150 kilometers or longer, are listed individually below. Smaller within-EU pipelines are grouped at the end. Projects included on the fifth PCI list are marked by ‡ (European Commission 2021).

Country	Pipeline name	Capacity (bcm/y)	Total pipeline length (km)	Length in country (km)	Cost (million €)
Construction					
Bulgaria	Bulgaria-Serbia Interconnector Gas Pipeline ‡	1.8	170	62	49
Bulgaria	Gas Interconnector Greece-Bulgaria (IGB) ‡	3	184	157	205
Greece				27	35
Italy	Methanization of Sardinia Project		573	573	615
Poland	Gustorzyn-Wronów Gas Pipeline		308	308	1054
Poland	Pogórska-Wola-Tworzen Gas Pipeline		168	168	301
Poland	Gas Interconnection Poland-Lithuania	2.4	508	343	382
Lithuania				165	184
Poland	Poland-Slovakia Gas Pipeline	5.7	165	108	177
Slovakia				57	93
Pipelines with length < 150 km				610	1308
Subtotal				2578	4403
Proposed					
Bulgaria	Varna-Oryahovo Gas Pipeline		844	844	677
Croatia	Interconnector Croatia-Serbia	7	182	109	93
Croatia	Omišalj-Zlobin-Bosiljevo-Sisak-Kozarac-Slobodnica LNG main evacuation pipeline	10	180	180	198
Cyprus	Israel–Egypt Offshore Gas Pipeline	10	593	43	149
Cyprus	Cyprus-Egypt Gas Pipeline	8	215	23	93
Greece	Poseidon Gas Pipeline ‡	15	976	914	3183
Italy				62	217
Italy	Adriatica Pipeline ‡	8.8	170	170	582
Italy	Sealine Tirrenica gas pipeline		255	255	873
Italy	Malta-Italy Gas Pipeline ‡	2	159	88	228
Malta				71	182
Portugal	Celorico-Spanish Border Gas Pipeline		162	162	115
Romania	BRUA Gas Pipeline		843	843	530
Romania	Black Sea Shore–Podișor Gas Pipeline ‡		308	308	360
Romania	North–Vest Romania Pipeline		518	518	405
Romania	Onești-Gheraesti-Letcani Gas Pipeline		165	165	131
Romania	Eastring Pipeline	20	1208	646	1391
Hungary				299	644
Bulgaria				232	500
Slovakia				29	61
Slovenia	Hungary-Slovenia-Italy Interconnector Gas Pipeline	1.2	412	250	125
Hungary				161	80
Italy				1	0
Spain	Guitiriz-Zamora-Adradas Gas Pipeline		625	625	2140
Pipelines with length < 150 km				1926	4727
Proposed Subtotal				8924	17685
Total				**11502**	**22088**