Global Energy Monitor

BRIEFING: DECEMBER 2022

When is enough, enough?

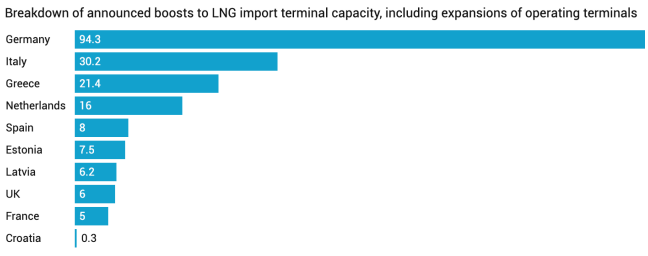
THE STATE OF PLAY WITH EUROPE'S NEW LNG TERMINAL PROJECTS IN RESPONSE TO THE ENERGY CRISIS

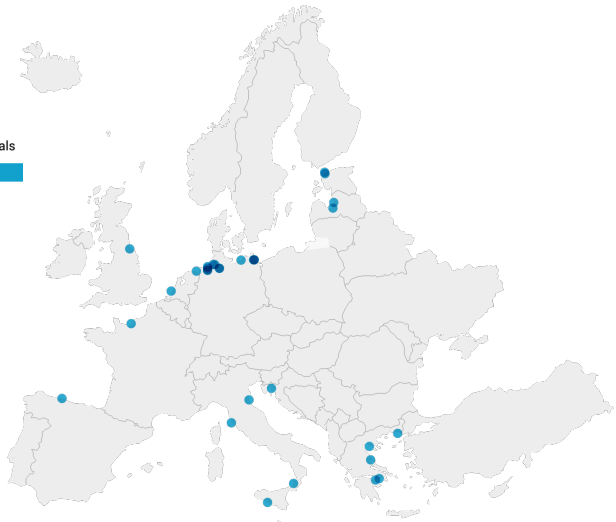
Summary

Since the outbreak of war in Ukraine, European states have announced plans for a major boost to LNG import terminal capacity (including expansions of operating terminals) across the continent. The crisis response has seen 195 billion cubic meters per year (bcm/y) of additional capacity being lined up to come online between 2022 and 2026. The aim is to ensure security of supply as Europe turns to LNG imports in a bid to significantly reduce Russian gas imports.

One problem is that the tightness of global LNG markets through 2025–26 means that supply in Europe can only be secured in the short term at extremely high price levels, as seen already this year even when Russian imports have been maintained at approximately 40% of their recent level and China's demand for LNG has slumped due to COVID lock-downs. A deeper problem for this huge proposed capacity buildout is that EU climate law implies a drop of at least 35% in gas demand by 2030, and measures to urgently develop renewable energy in order to cut gas usage are now ramping up. The deals agreed to in 2022 for LNG delivery to Europe illustrate the bind the EU is in: some short-term deliveries have been secured, likely at high cost, while several long-term contracts will kick in too late to address acute needs this winter and next. At the same time, because of their 15–20 year duration, these contracts could run contrary to the EU's long-term gas demand reduction trajectory.

Europe's LNG rush in 2022





(Figures above taken from Global Energy Monitor's European Gas Crisis 2022)

Key data

As of the end of November, 195 bcm/y of new gas import capacity has been proposed, with 9.1 bcm/y of this new capacity already online and four floating storage and regasification units (FSRUs) currently under construction. By comparison, the EU imported 155 bcm of gas in 2021 from Russia, including LNG.

GEM research has identified estimated costs for these new projects across Europe of at least €7 billion, a minimum figure due to information gaps for some of the individual terminal projects. This figure does not include the recently reported increase in costs for Germany's purchase and maintenance of five new FSRUs: approximately €6.56 billion in total, according to Germany's Federal Ministry for Economic Affairs and Climate Action, up from an official estimate earlier this year of €2.94 billion.

For a breakdown of the 26 LNG development and expansion projects that have sprouted this year, many of them with state backing, see this spreadsheet.

The proposed capacity conveyor belt

- In response to supply disruptions from Russia and increased LNG imports from other sources, **9.1 bcm/y** of new crisis-related capacity has already started **operating**—at Krk FSRU (Croatia), Revithoussa LNG Terminal (Greece), and Eemshaven FSRU (Netherlands).
- **33 bcm/y** of new capacity is **under construction** and expected to be operating in 2022/early 2023—at El Musel (Spain), Inkoo (Finland), and Brunsbuttel, Lubmin, and Wilhelmshaven (Germany).
- No other construction work is known to have started yet, though seven proposed import terminal projects are projected to begin operating before the end of 2023 with potential capacity of **36.6 bcm/y**. Four of these are floating terminal projects along Germany's northern coast.
- Assuming the not-yet-under-construction projects are commissioned on schedule by the end of 2023, this would represent an addition of **78.7 bcm/y** of new import capacity unleashed under crisis conditions since February 2022.

Table 1: New import capacity

Year	New import capacity if announced construction schedules are met (bcm/y)
2022	29.1
2023	49.6
2024	20.2
2025	40.5
2026	33.5

Note: Proposed start dates for some of the projects are unknown. Not included in these capacity additions under crisis conditions are two further capacity additions expected in 2023: 5.5 bcm/y capacity coming online at Alexandroupolis FSRU in Greece, which has been in development since 2019, and a 2.2 bcm/y capacity expansion at Świnoujście LNG terminal in Poland that was announced in 2020.

Table 2: Deals for EU-destined LNG signed in 2022

Date	Developer	Buyer	Destination	Deal Type	Bcm/y	Start year	Duration	Link
16.05.22	Sempra (U.S.)	PGNiG	Poland	HOA	4.0	2027	20 years	Press Release
22.05.22	NextDecade (U.S.)	Engie	France (not confirmed)	SPA	2.38	2026	15 years	Press Release
25.05.22	Sempra (U.S.)	RWE	Germany	HOA	3.0	2026-28	15 years	Press Release
21.06.22	Venture Global (U.S.)	EnBW	Germany	SPA	2.0	2026	20 years	Press Release
05.09.22	Woodside Energy (Aust)	Uniper	Germany	Flexible SPA	1.0	2023	16 years	Press Release
25.09.22	Abu Dhabi National Oil Company (ADNOC)	RWE	Germany	One off cargo	0.0137	2022		Press Release
25.09.22	ADNOC	RWE	Germany	Unspecified # of cargoes	-	2023		Press Release
06.10.22	Venture Global (U.S.)	EnBW	Germany	SPA	0.68	2026	20 years	Press Release
28.10.22	ADNOC	OMV	Austria	One off cargo	0.1	2023		Euractiv
29.11.22	QatarEnergy	Conoco Phillips	Germany	2 SPAs	2.8	2026	15 years	Reuters
01.12.22	Sempra (U.S.)	INEOS	Germany	SPA	1.9	2027	20 years	Press Release
01.12.22	Sempra (U.S.)	INEOS	Germany	HOA	0.27	2027	Not stated	Press Release
5.12.22	Trafigura	SEFE	Germany	Portfolio sales agreement	"Substantial volumes"	Nov 2022	4 years	Press release
6.12.22	Sempra (U.S.)	Engie	France	SPA	1.2	2027	15 years	Press release

Additional EU LNG supply deals announced, but with no details yet available on gas volumes:

1. Egypt, Israel to boost gas supply to EU amid war - June 2022

Major diplomatic deal on a memorandum of understanding, but "it was not immediately clear how much gas the EU will import from either country."

November 2022 update: Israel says big boost in gas supply to Europe will take "several years"
Clarification from the Israeli government at COP27 that additional exports to Europe via Egypt will remain low in the short term but will rise by 2025-2026.

2. Germany, Egypt sign LNG & renewable hydrogen partnership - November 2022

Memoranda of understanding were signed before COP27, with no details provided.

Long-term contracts are not a short-term fix and threaten to undermine momentum for sharply reduced gas demand

Prior to COP27 in November, Germany's special climate envoy, Jennifer Morgan, told a *Financial Times* conference: "We're not looking at contracts for gas for more than 15 years…We have a legally binding greenhouse gas target for 2045. We'll actually peak our gas use earlier…the decisions that are made now are really going to decide whether or not the 1.5C [warming] goal stays in sight or not. That is the battle that's happening, not only in the marketplace, but between companies and countries."

Several concrete sales and purchase agreements (SPAs) have been signed, chiefly between U.S. sellers and German companies. The majority of these contracts are scheduled to start from 2025–2026, and they are of 15–20 year duration. One contract between Australia's Woodside Energy and Uniper will start next year and run to 2039. Woodside began delivery of LNG to Uniper on November 28 with a cargo of 100 million cubic meters arriving at Rotterdam, the first direct shipment of Australian LNG to the EU since 2009. Initial, non-binding heads of agreements (HOAs) are also lined up for 15–20 years' duration between German and Polish buyers and the U.S.'s Sempra. These supplies, from not-yet-constructed U.S. export terminals, could start in 2026 at the earliest. The pricing of contracts remains unknown due to commercial confidentiality.

Under the European Climate Law, the EU as a whole is aiming to reduce gas demand by 35% compared to 2019 levels by 2030. **Long-term gas contracts threaten to derail these climate goals.** Somewhat lost in the LNG stampede that it helped to stimulate, the European Commission's REPowerEU proposal from May this year—if fully implemented—could also entail a 52% reduction in EU gas demand by 2030, again compared to 2019.

On November 20, a spokeswoman for German utility RWE, which signed a non-binding 15-year deal with Sempra in May, told *The Wall Street Journal* that the company was urging government officials to support long-term gas contracts. On November 29, it was announced that two SPAs had been signed between QatarEnergy and the U.S. company ConocoPhillips to supply Germany with 2.8 bcm of LNG starting in 2026 for at least 15 years. Commenting on the deal, Germany's economy minister Robert Habeck said: "Fifteen years is great…I wouldn't have anything against 20-year or even longer contracts." Habeck further commented that Germany would purchase less gas in the future if the country's climate goals were to be met, in which case the companies "will have to deliver the volumes they've bought to other countries."

This deal, in the making for several months, sees Germany prepared to disregard economic and climate concerns by doubling down on long-term supply deals, with further Middle East contracts reportedly in the offing. While the implications for achieving greenhouse gas emission reduction targets remain unclear, efforts to keep the 1.5°C warming goal in sight have been muddied by the length of these and potentially other contracts to follow.

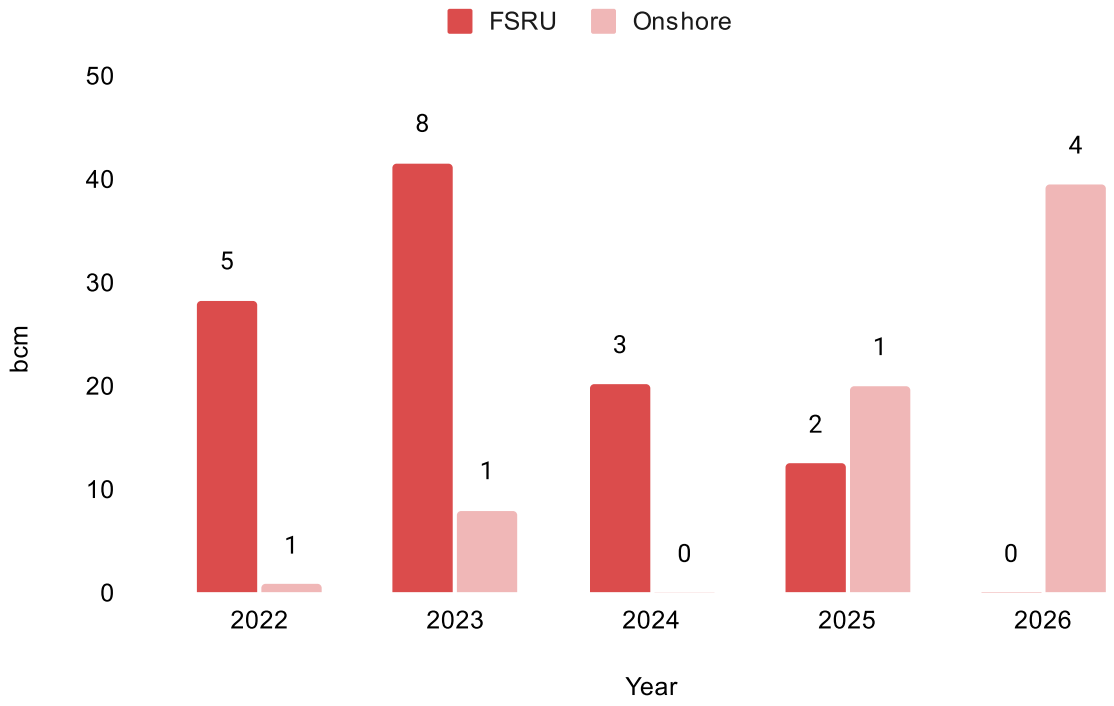
Can these new LNG terminal projects address short-term security of supply concerns for Europe?

From January to October 2022, Europe has imported approximately 137 bcm of LNG, representing a 40% year-on-year increase. Over 90% of EU gas storage is filled ahead of this winter's heating season as a result of a concerted import drive that has seen the continent's previously underutilized LNG import terminal capacity being used much more extensively as importers have turned to far more expensive spot markets in order to secure LNG supplies.

This reliance on the spot market is set to continue as there is little additional LNG supply coming to the market until around 2026, when planned projects in the U.S. and Qatar are predicted to come online. The Japanese government has recently warned that the extremely tight global LNG supply situation is set to intensify until 2026. Spot market prices, currently trading at levels three times higher than long-term contracts, may go higher or at least remain highly volatile.

As the European Commission's second quarterly report on European gas markets in 2022 records (page 12), an LNG drive amid sharply elevated price conditions has already had a dramatic impact on the EU's gas import bill for the first half of the year: "As average import gas prices increased significantly year-on-year (showing a nearly four-fold growth compared to Q2 2021), in the second quarter of 2022 the estimated gas import bill amounted to nearly €75 billion, remaining close to the record registered in the previous quarter (€76 billion). In comparison to €20 billion in Q2 2021, the bill rose by 282% year-on-year."

Capacity and number of planned FSRU and onshore projects by year



Source: Global Energy Monitor's European Gas Crisis 2022

Europe's efforts to fast-track primarily new floating terminals have been startling: approximately 139 bcm/y of new import capacity is scheduled to be operating by 2025. This is an excessive and potentially highly expensive (in terms of construction costs alone) reaction to the disruption in Russian gas supplies, and a lack of continent-wide coordination explains the capacity overshoot if all of these projects are ultimately realized.

The rapid installation of new import capacity in 2022 and 2023 will assuage security of supply concerns to some extent but cannot overcome the fundamental problem of limited LNG supply in the short- to medium term. Reflecting this, the International Energy Agency warned in early November that Europe's gas shortfall in summer 2023 could reach an estimated 30 bcm and called for "urgent action from governments" to structurally reduce gas demand through improvements in energy efficiency and the accelerated deployment of renewables and heat pumps. If such warnings are ignored, European states will have little option other than to remain shackled to vastly inflated spot import prices until at least 2026, with adverse consequences for domestic and business consumers, state budgets, and the climate.

Research has shown, however, the potential for accelerated deployment of renewables to reduce Europe's exposure to costly gas imports significantly and quickly: a record increase in EU electricity generation from wind and solar up to September this year avoided the need for eight bcm of additional gas at a cost of €11 billion, according to data from E3G and Ember. Accelerated deployment of heat pumps is also underway across the continent. EU energy ministers have agreed in principle to an emergency regulation that would speed up the permitting and deployment of renewable energy projects. This awaits formal approval, potentially at an EU Energy Council meeting on December 13.

Can these new projects be used to import hydrogen?

Outside of Germany, there is no firm evidence of planning to convert Europe's proposed new LNG infrastructure to allow for the importing of hydrogen in the future. Project promoters in Germany and the German government have sought to downplay the greenhouse gas lock-in potential of the proposed new import terminals by touting their future use for renewable energy carriers such as liquid hydrogen or ammonia.

One project, an onshore terminal at Wilhelmshaven being led by Tree Energy Solutions, has the most concrete plans for green hydrogen imports. Planned to come online in 2025 initially to import LNG, the company has said that from 2027–28 onwards its regasification terminal will "increasingly be reserved for imports of fossil-free green gas." The Brunsbüttel LNG Terminal near Hamburg is planned to start operating in 2026. The state-owned Dutch gas company Gasunie has said recently that it plans to "eventually make the LNG terminal in Brunsbüttel ready for hydrogen production, thus becoming a hydrogen supply centre for northern Germany."

Whether this kind of "future hydrogen" labeling from project promoters in Germany is achievable was called into question by a November 2022 study from the Fraunhofer Institute for Systems and Innovation Research. Based on interviews with industry representatives and academics, the study found a significant lack of clarity over the use of the term "hydrogen readiness," and points out that terminal conversion for ammonia is more likely than for liquid hydrogen. Moreover, where such planned conversions are incorporated into the initial design and choice of materials for the facilities (and it is not clear that this is the case for most of the new German terminals), additional costs of 20–50% of the original capital expenditure are estimated by Fraunhofer Institute for such terminal conversions.

"The feasibility of converting LNG terminal infrastructure for alternative energy carriers depends highly on the individual characteristics of the terminal and its location and generalized conclusions applicable for all terminals cannot be drawn," the study notes, adding also, "Only when LNG terminals are made technically fit for conversion in their construction phase and design concepts can point to credible plans for LH2 [liquid hydrogen] or NH3 [ammonia] supply and end-uses, could they be considered future-proof."

Background on Global Energy Monitor

Global Energy Monitor (GEM) is a nonprofit research organization developing information on fossil fuel projects worldwide. GEM data is used by the International Energy Agency (IEA), the OECD Environment Directorate, UN Environmental Programme, U.S. Treasury Department, and the World Bank, among other institutions.

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