Global Energy Monitor

BRIEFING: DECEMBER 2023

LNG 2023: Last year's energy shock still reverberates, as the world builds towards LNG oversupply

Key points

- The global pipeline of new liquefied natural gas (LNG) projects in development totals 917 million tonnes per annum (mtpa) of new export capacity and 705 mtpa of new import capacity, amounting to an estimated US$1 trillion in investment. Considering the International Energy Agency's (IEA) forecast that global gas demand will peak by 2030 under present-day policy settings and international efforts to reach carbon emissions targets, new LNG investments are risky.

- A wave of new LNG export projects is expected to come online around the middle of the decade, half of which are under construction in the United States or Qatar. The ensuing supply glut could render some projects unprofitable and leave governments and investors with costly stranded assets. If governments meet their stated climate goals, export projects under construction today worth an estimated US$118 billion could fail to recover their initial investments.

- Asia and Europe are still the primary developers of new LNG import projects, housing about 90% of all new capacity in development. However, LNG demand in Europe could prove short-lived as the continent pursues its decarbonization agenda, and the price sensitivity of many Asian importers has called into question LNG demand growth forecasts.

Summary

In 2022, Russia's invasion of Ukraine sparked an energy security crisis as the European Union (EU) vowed to curtail its Russian gas imports. European countries rushed to scoop up LNG from the spot market and propose a slate of new LNG import projects, while the ensuing global gas crunch lent new momentum to massive, proposed export terminals in the United States.

This year, the effects of these shifting global dynamics began to materialize. Seven LNG terminals began operating in Europe in 2023, increasing the region's import capacity by nearly one-fifth, and three U.S. export projects, equivalent to roughly half the country's existing export capacity, reached final investment decisions (FIDs).

Elsewhere in the world, the LNG industry's trajectory is less clear, as uncertainty over future

demand, price volatility, and concerns over gas' climate impacts cloud many projects' prospects. Nonetheless, the scale of in-development LNG projects — those that have been proposed or are under construction — has grown to 917 mtpa and 705 mtpa in new export and import capacity, respectively, representing an estimated US$1 trillion in investment.[1] There is now 18% more export capacity and 4% more import capacity under development than during GEM's last LNG update in September 2022.

Building even a fraction of these projects would threaten to further delay the energy transition during a critical period. This year's flagship report from the IEA forecasts that global fossil demand will peak by 2030 — and must peak by then to keep international climate goals alive. As such, new LNG projects are risky investments from economic and climate perspectives. The IEA has found that even among projects already under construction today, a majority could fail to recover their initial capital investments under climate targets.[2]

This briefing presents Global Energy Monitor (GEM) data and analysis, globally and by region, from the 2023 annual LNG update to the Global Gas Infrastructure Tracker (GGIT).

The global LNG buildout pushed ahead in 2023

There are 917 mtpa of LNG export projects proposed or under construction worldwide — an enormous quantity. Export projects amounting to 193 mtpa are already under construction and set to expand global LNG export capacity by 41%. LNG import projects totaling 705 mtpa are in development, and the 203 mtpa of this capacity already under construction will boost global import capacity by 19%. GEM estimates that the capital investment required to build these projects in development is US$878 billion and US$190 billion for export and import projects, respectively.

The leading countries developing new export terminals are the United States (336.9 mtpa), Russia (164.1 mtpa), Canada (75.8 mtpa), Mexico (69.3 mtpa), and Qatar (49 mtpa) (Figure 6). New import capacity is dominated by Asia (454 mtpa) and Europe (183 mtpa), with China (267.9 mtpa), India (75.2 mtpa), and Germany (65.4 mtpa) having the most capacity in development (Figure 9).

The pipeline of new export projects in development is about 18% larger than during GEM's last global update concluding September 2022. Since that update, two new LNG export projects advanced from construction to operation: Mozambique's Coral South FLNG Terminal (3.4 mtpa) and Indonesia's Tangguh LNG Terminal Train 3 Expansion (3.8 mtpa). Earlier in 2022, the United States' Calcasieu Pass LNG Terminal (12 mtpa)[3] and Russia's Portovaya LNG Terminal (1.5 mtpa) came online.

Since GEM's last update, the pipeline of import projects in development has grown by 4%. Twenty-four new LNG import projects came online totaling 89.9 mtpa, and five projects totaling 19.7 mtpa came online earlier in 2022. During 2022 and 2023, about three-fifths of new import capacity was added in Asia and two-fifths was added in Europe.

Still, many LNG projects under development fail to materialize. In 2023 alone, 30.7 mtpa of proposed export capacity was shelved or cancelled, and 28.8

1. In billion cubic meters per year (bcm/y), this amounts to 1250 bcm/y of new LNG export capacity and 959 bcm/y of new LNG import capacity in development worldwide.
2. Specifically, IEA forecasts that around two-thirds of LNG projects under construction could fail to recover their capital investments if countries meet their own climate targets (APS scenario), and 75% could fail to do so under a net zero by 2050 pathway (NZE scenario).
3. Calcasieu Pass LNG Terminal began operating at full capacity in 2022, although the facility has not yet formally begun commercial operations, which is the source of ongoing arbitration claims by its contracted buyers.

mtpa of import capacity shifted to one of these statuses.[4] Globally, at least half of export capacity in development is delayed, as is over a fifth of all import capacity. Major setbacks befell projects such as Canada's Goldboro LNG Export Terminal (10 mtpa) and the United States' G2 LNG Export Terminal (13 mtpa), which were abandoned by their sponsors as they shifted away from LNG. Other examples include Ireland's import terminal Shannon FSRU (6.1 mtpa), which was denied permission by a local government body on climate grounds, and Latvia's Skulte LNG Import Terminal (3 mtpa), from which the government withdrew support as it deemed the project no longer necessary.

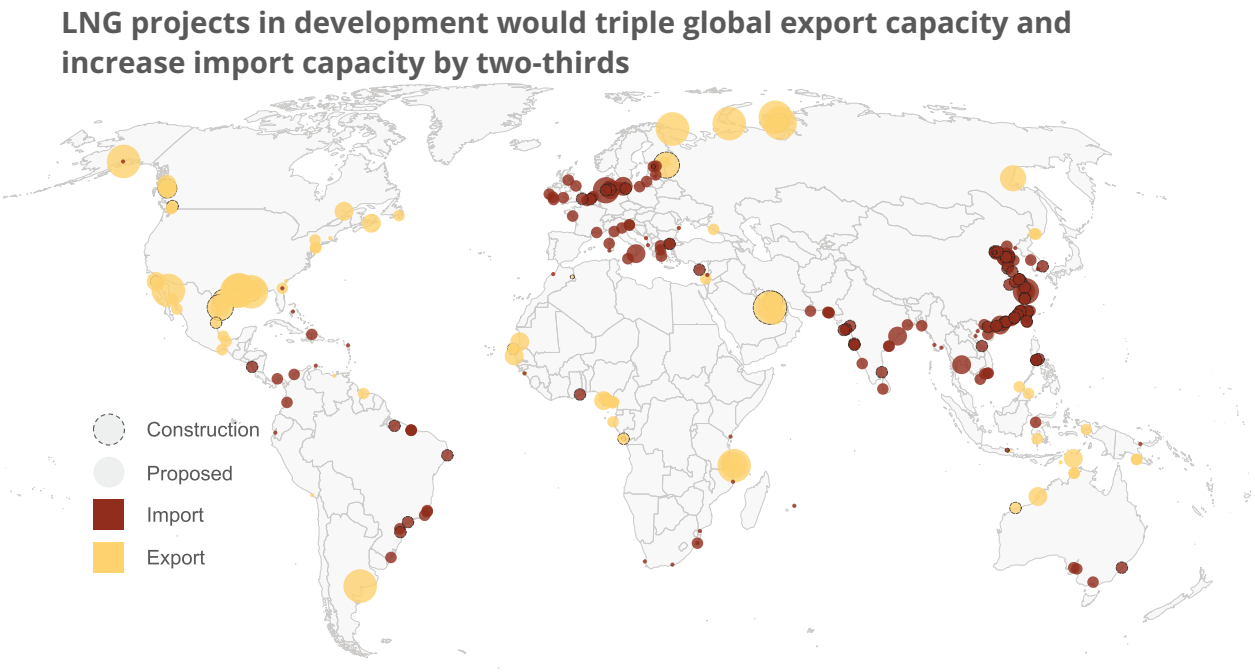
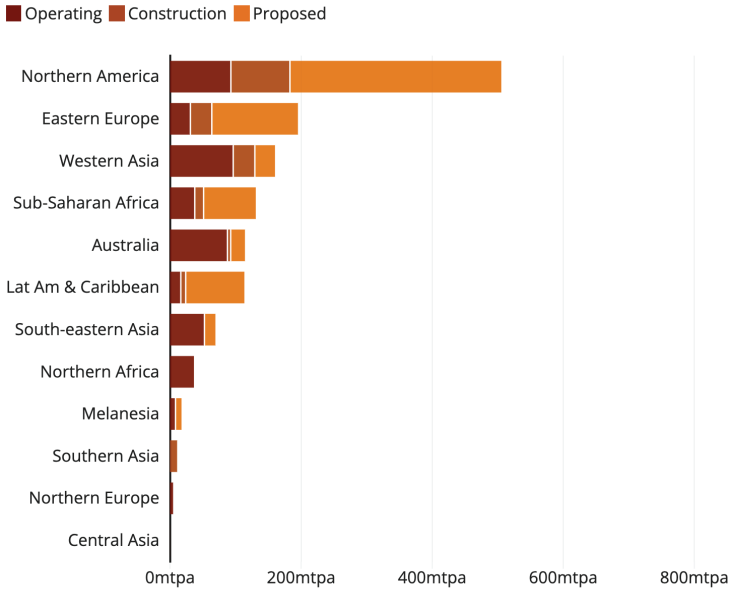


Figure 1

4. GEM considers a project shelved or cancelled if it is reported, or if a project proposal appears inactive for 2 or 4 years, respectively.

North America is expected to solidify its position as the leading LNG exporter this decade

LNG export capacity operating, in construction, and proposed by subregion (mtpa)

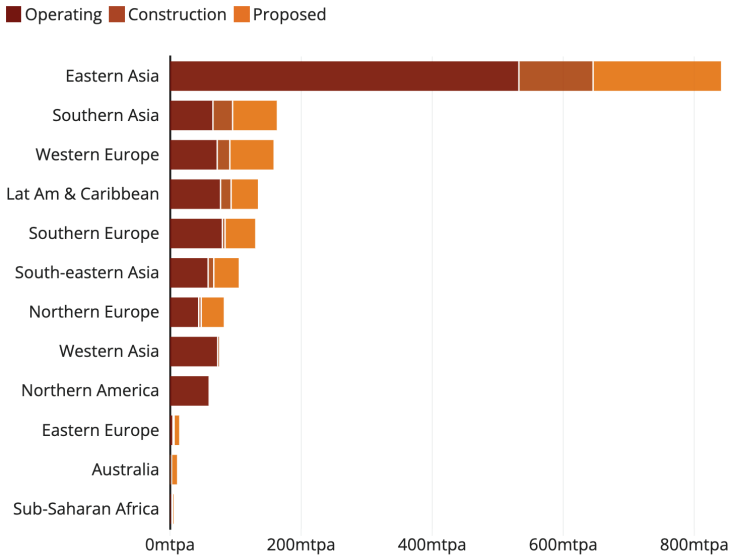


Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Figure 2

Nine-tenths of LNG import capacity in development is in Asia and Europe

LNG import capacity operating, in construction, and proposed by subregion (mtpa)

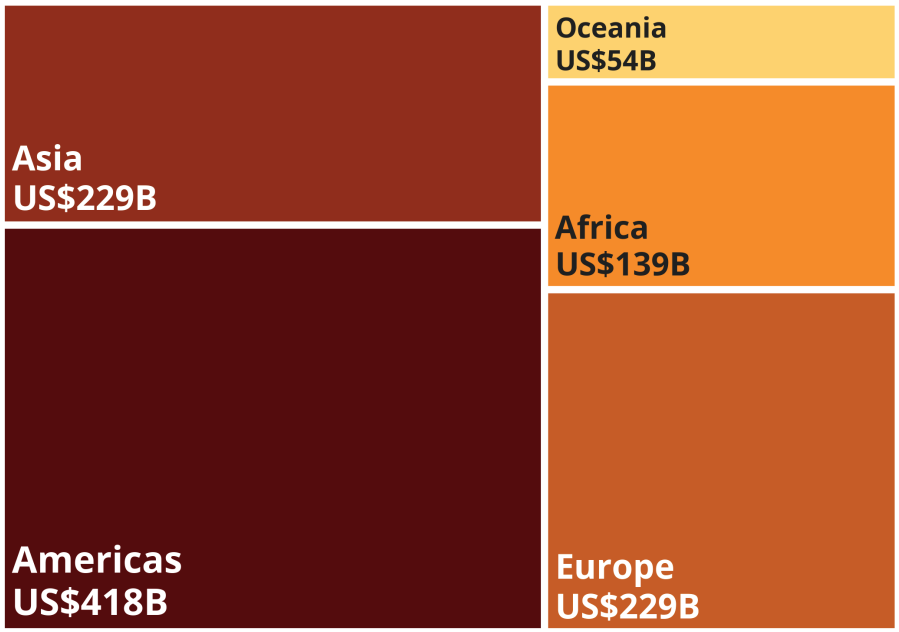


Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Figure 3

Global LNG buildout to cost US$1 trillion

Estimated investment for in-development LNG terminals, grouped by region (export and import projects combined)



Source: Global Gas Infrastructure Tracker

Global Energy Monitor

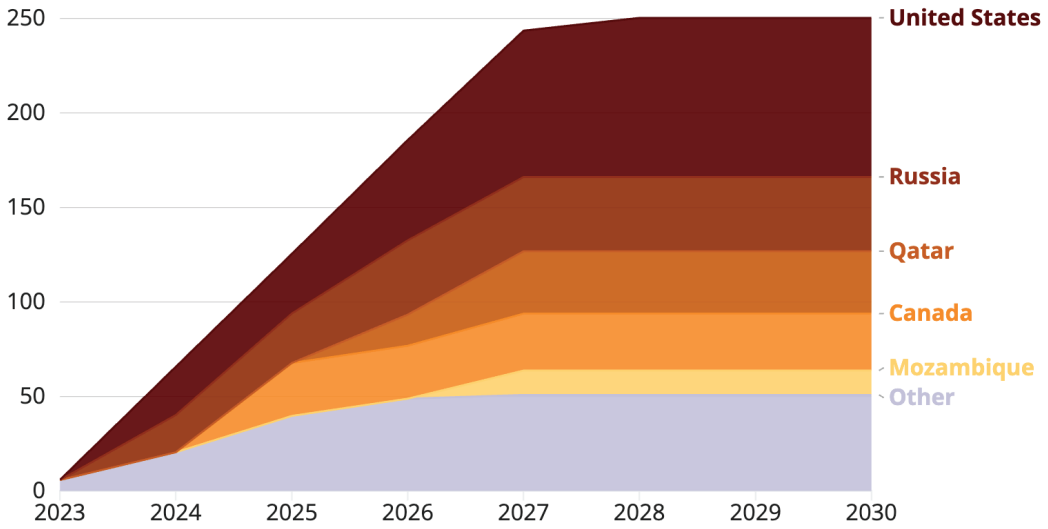
Figure 4

Relatively little new LNG export capacity has come online in recent years, and no significant new export capacity will be added until the middle of the decade. At that point, however, a wave of new projects (Figure 5) — half of which are under construction in the United States or Qatar — could saturate the global LNG market, increasing competition among exporters and rendering some projects unprofitable. Governments, investors, and communities dependent on these new projects could find themselves left with stranded assets. If governments meet their stated climate goals, export projects under construction today worth an estimated US$118 billion could fail to recover their initial investments.[5]

5. This calculation is based on the IEA's Announced Pledges Scenario, where governments meet their climate pledges, as well as the organization's estimate in the World Energy Outlook 2023 that two-thirds of LNG projects under construction could fail to recover their initial costs.

U.S. leading planned new LNG export capacity additions

LNG export capacity under construction or sanctioned (post-final investment decision), by year that new capacity is expected to come online



Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Figure 5

The U.S., Russia, and several others dominate new LNG export development

United States

The United States was the world's largest exporter of LNG during the first half of 2023, and it is expected to solidify that position as five new projects boosting export capacity by 80% come online over the coming years (Figure 5). After U.S. project developers secured a flurry of new long-term LNG contracts in 2022, three projects reached FID in 2023: Plaquemines LNG Terminal Phase 2 (10 mtpa), Port Arthur LNG Terminal Phase 1 (13.5 mtpa), and Rio Grande LNG Terminal Phase 1 (17.6 mtpa). Three more projects were already under construction as of this year, Golden Pass LNG Terminal (18.1 mtpa), Corpus Christi LNG Terminal Stage 3 (11.5 mtpa), and the first phase of Plaquemines LNG Terminal (13.33 mtpa). Along with export projects underway in Canada and Mexico, LNG export capacity across all of North America[6] could more than double by 2027.

As GEM wrote in last year's report, Gas Bubble 2022, the U.S. LNG buildout runs counter to national interests. LNG exports raise domestic gas prices, as numerous gas utilities and regulators attest. LNG terminals, especially in the Gulf Coast, exacerbate environmental injustice — facilities' emissions and other environmental impacts threaten low-income communities and communities of color, many of

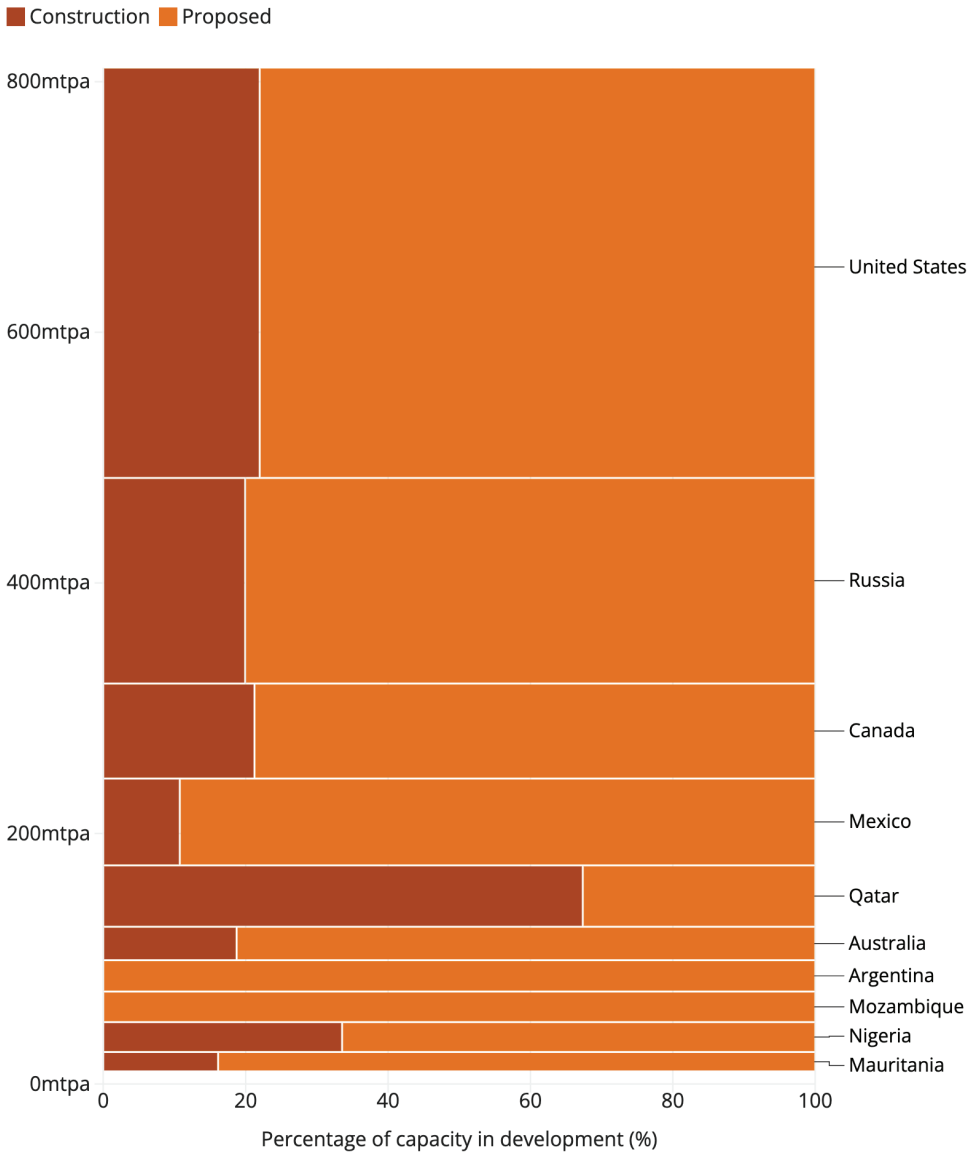
6. Mexico is included in North America here, in line with the source from the U.S. Energy Information Administration, although in GEM's standard region definitions Mexico is part of Latin America and the Caribbean.

which have already been burdened by pollution from the oil and gas industry. Additionally, LNG terminals increase domestic emissions, and exported LNG for power offers foreign economies little — or perhaps zero — emissions reduction benefits over coal plants, when methane leakage and energy consumption from extraction, liquefaction, transport, and regasification are taken into account.

Five countries have planned three-quarters of potential new LNG export projects

Top 10 countries developing new LNG export capacity (responsible for 91% global total)

How to read this chart:
→ % of capacity in development by status
↓ height of bars = total capacity in development, in million tonnes per annum (mtpa)



Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Global Energy Monitor

Figure 6

Russia

Russia has the world's fourth-largest LNG export capacity (31.1 mtpa), and the second-largest pipeline of in-development projects (164.1 mtpa) (Figure 6). The delayed Arctic LNG Terminal 2 Train 1 (6.6 mtpa), which the U.S. government has targeted with sanctions, is expected to begin operating this winter. As for LNG projects planned further out, the IEA's World Energy Outlook notes that the anticipated "glut of LNG" beginning in the middle of the decade "could limit opportunities for Russia to secure additional markets."

While the EU is reportedly on track to eliminate all gas imports from Russia this decade, having cut imported volumes from 154 billion cubic meters (bcm) to 82.1 bcm between 2022 and 2021, it has sharply increased imports of Russian LNG: the EU imported 40% more LNG from Russia during the first seven months of 2023 compared to the same period last year. The Telegraph estimated that the EU's LNG imports this year have funded Russia €6.1 billion.

Western Asia (Middle East)

In 2022, Qatar was tied with the United States as the world's largest LNG exporter. Qatar's current LNG export capacity of 77.4 mtpa will be boosted by the 33-mtpa Qatar North Field LNG Terminal North Field East Expansion project, which began construction this year and is expected to start operating in 2026 (Figure 6). The proposed 16-mtpa North Field South Expansion is also likely to move forward. In the third quarter of this year, European oil supermajors Shell, TotalEnergies, and Eni announced 27–year purchase agreements with Qatar, the longest LNG contracts ever signed, taking on significant risk considering the uncertainty of LNG demand around the middle of the century.

Qatar is the biggest LNG developer in Western Asia, though several other countries are planning projects. Significant export proposals in the region include the NewMed FLNG Terminal (5 mtpa) in Israel, which has recently seen costs balloon due to inflation, and the United Arab Emirates' revived Ruwais LNG Terminal (9.6 mtpa).

Africa

Sub-Saharan Africa has emerged as a potential hub of LNG exports (Figure 7), but many projects have stalled. The region's first floating liquefied natural gas (FLNG) terminal, Mozambique's Coral South FLNG Terminal (3.4 mtpa), came online in late 2022, and a second floating facility on the maritime border of Senegal and Mauritania, Greater Tortue Ahmeyim FLNG Terminal (2.5 mtpa), is scheduled to come online in mid-2024, two years delayed. Two mega-projects in Mozambique remain stalled due to an insurgency in Cabo Delgado province — the TotalEnergies-led Mozambique LNG Terminal (22.9 mtpa) and ExxonMobil-led Rovuma LNG Terminal (18 mtpa) — although their sponsors have suggested they are considering proceeding over the coming months.

As GEM has previously written about Africa's gas buildout, new LNG exports do little to address the continent's low electrification rates, while exposing Africa's energy system to the volatility of the global LNG market. The IEA has also noted that Africa's LNG projects are likely to be uncompetitive against lower-cost producers in the 2030s. Summarizing the IEA's findings, historian Adam Tooze said, "The case against these projects is that against the backdrop of the global exit from fossil fuels they are uneconomic and will become a significant burden for the national governments that back them."

There is relatively little new LNG export or import capacity under development in Northern Africa. Existing exporters, such as Algeria and Egypt,

have contributed to easing Europe's shortfall of gas imports, though supply disruptions due to the Israel-Hamas conflict could threaten a recent Egypt-European Union supply deal.

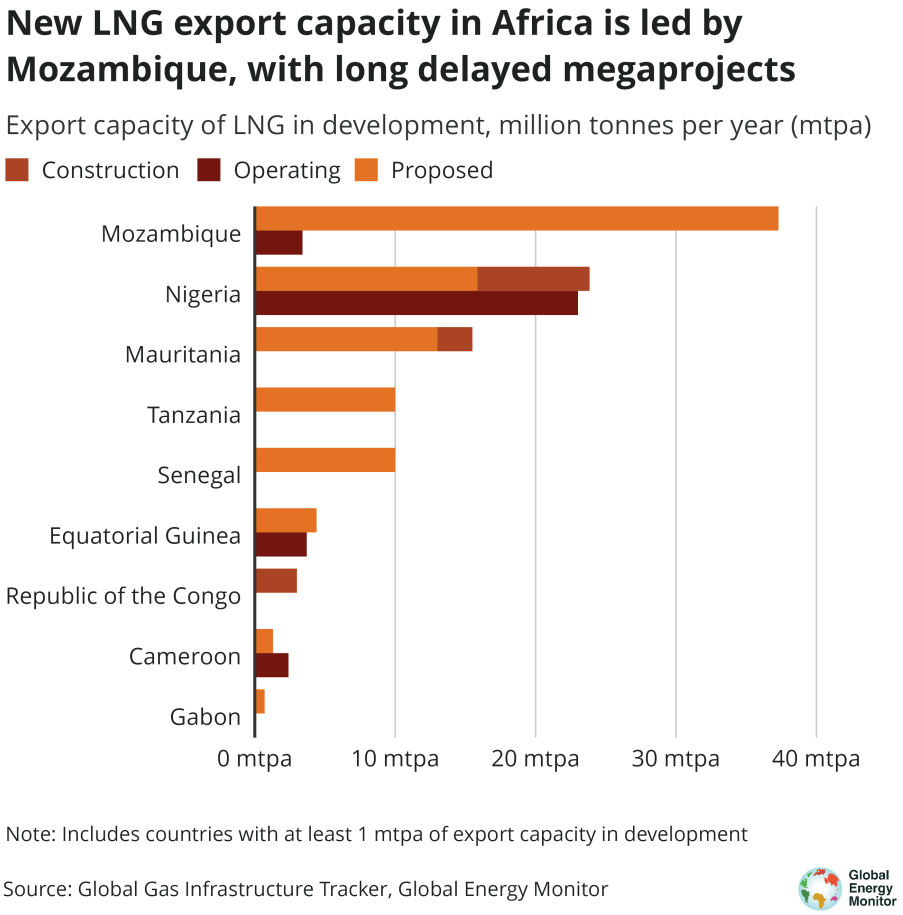


Figure 7

Australia

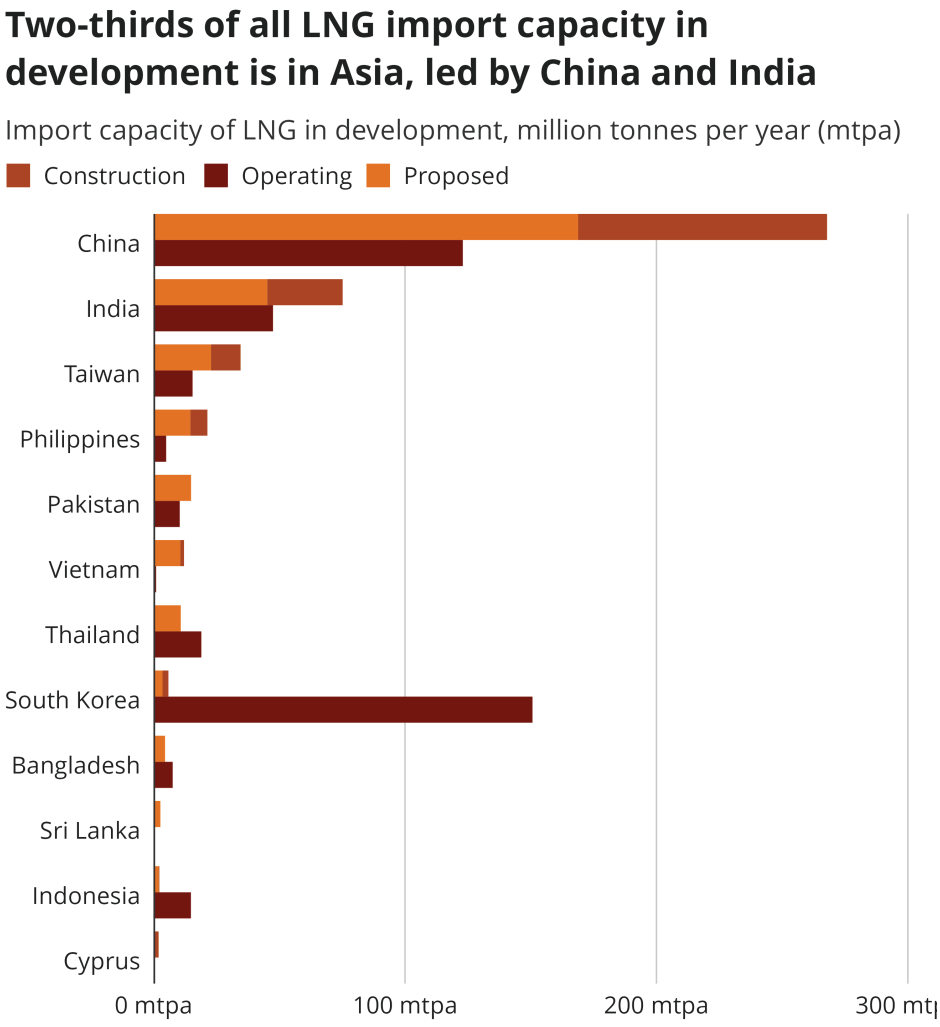
Australia has been a leading LNG exporter over the past few years, with 87.6 mtpa of operating export capacity. Although it has the sixth-largest pipeline of new LNG export projects in development (Figure 6), just one 5-mtpa project is under construction, Pluto LNG Terminal Train 2, and new projects face headwinds. Over the past year, Australia has passed a series of policy measures intended to ensure the availability of domestic gas supplies, control gas prices, and reduce emissions. In particular, a new law instituted in July requires that new LNG facilities be carbon neutral and that operating facilities reduce emissions annually, by at least 4.9 percent through 2030. The head of Japan's oil and gas corporation Inpex has suggested Australia is "quietly quitting" the LNG industry.

Significant export projects under consideration include Woodside Energy's 11.4 mtpa Browse FLNG Terminal, which has stopped and started in various forms for over a decade, and the 6.6 mtpa Northern Territory LNG Terminal proposed this year. Australia is also home to five import facilities under development, including the under-construction Port Kembla FSRU (2.33 mtpa). The floating terminal is 70% complete but has not yet signed any contractual agreements with Australian energy providers, with buyers reportedly unlikely to sign up to the project before 2026.

Asia and Europe lead new LNG import development, followed by Latin America

Asia

With about two-thirds of all operating LNG import capacity (728.8 mtpa) and two-thirds of all such capacity in development (454.3 mtpa), Asia is the biggest demand center for LNG (Figure 3). The largest LNG buildouts are planned by China (267.9 mtpa), India (75.2 mtpa), Taiwan (34.6 mtpa), the Philippines (21.4 mtpa), Pakistan (14.9 mtpa), and Vietnam (12.1 mtpa) (Figure 8). Notably, the Philippines and Vietnam brought their first LNG terminals online this year: Philippines LNG Terminal (5 mtpa) and Thi Vai LNG Terminal (1 mtpa).



Note: Includes countries with at least 1 mtpa of export capacity in development

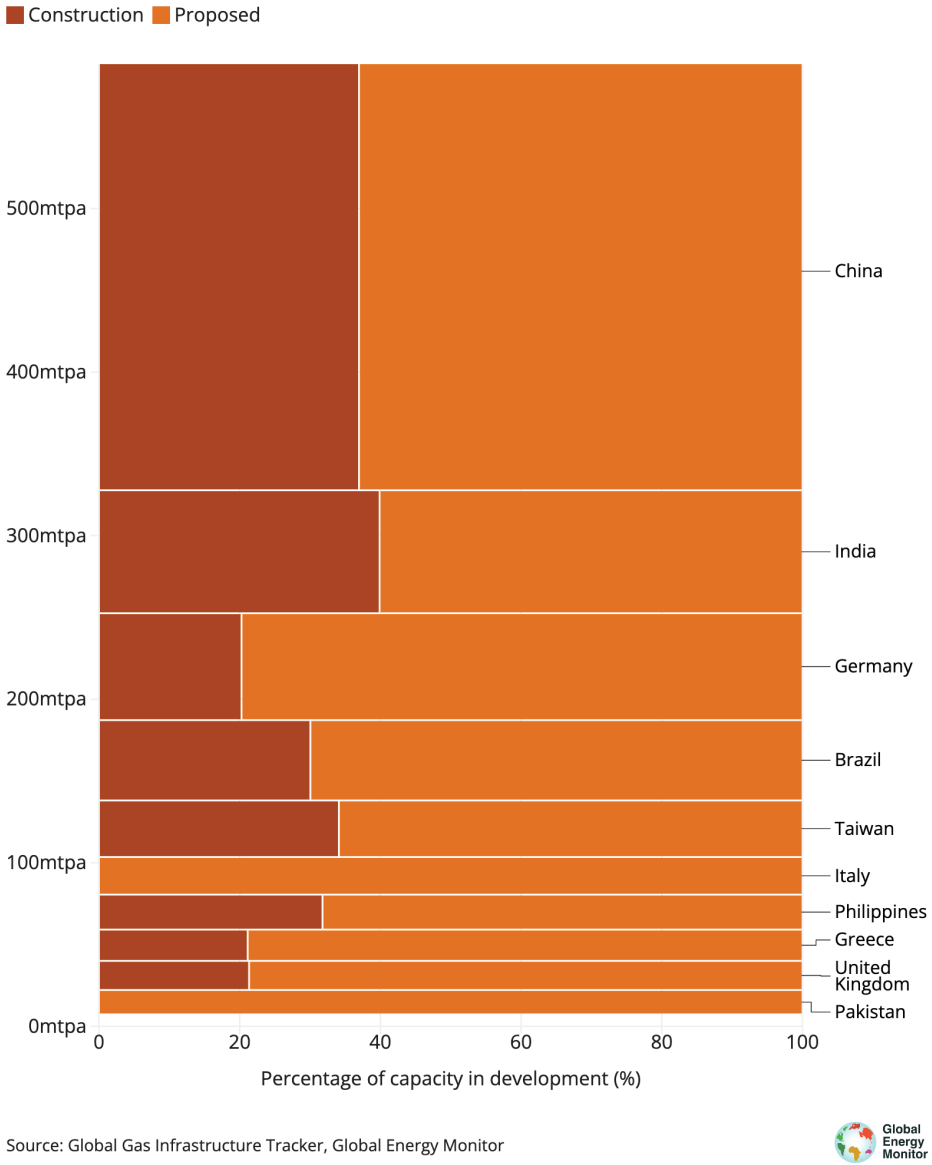
Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Figure 8

Over one-third of all new LNG import capacity is planned in China, though its future demand is uncertain

Top 10 countries developing new LNG import capacity (responsible for 83% global total)

How to read this chart:
→ % of capacity in development by status
↓ height of bars = total capacity in development, in million tonnes per annum (mtpa)



Source: Global Gas Infrastructure Tracker, Global Energy Monitor

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Figure 9

As gas demand in Europe may have already peaked, LNG exporters view Asia as the primary market for demand growth; however, future demand is highly uncertain. Last year, as the European gas crisis caused global spot prices to spike, Asia's spot LNG imports fell by 17%. The IEA now expects Asia's gas demand to peak by 2030, and the International Gas Union, an industry organization, has noted that price sensitivity in Asian countries "poses a risk for future LNG demand in Asia that previously had been expected to be a key region for LNG demand growth in the coming decades." GEM data shows that a large

number of projects in Asia are struggling to move forward. LNG import projects totaling at least 96.1 mtpa have been delayed, representing over a fifth of capacity in development, and, in 2023 alone, projects amounting to 20.1 mtpa and 4 mtpa of new import capacity were shelved and cancelled, respectively.[7]

In October, the Financial Times questioned whether Bangladesh will regret its bet on gas, as it contends with fuel shortages and surging energy import costs, and BloombergNEF reported that solar power will soon be the country's most affordable electricity source. Pakistan, which was shut out of the LNG spot market amid high prices, recently booked its first cargo in over a year, but was stuck with the highest rate of any reported contract this winter due to the country's perceived credit risk. Meanwhile in Thailand, one of the countries that bucked last year's trend of falling LNG imports, Reuters reports that the country's LNG boom has wiped out any emissions savings from declining coal use. The gas industry's case for LNG as a transition fuel in Asia appears weak.

Europe

The burst of new European LNG import projects proposed after the beginning of the war in Ukraine has begun to materialize. This year, seven LNG terminals began operating in Europe, increasing the region's import capacity by nearly a fifth, including, among others, Germany's Brunsbüttel FSRU (5.9 mtpa), Italy's Piombino FSRU (3.7 mtpa), and Finland's Inkoo FSRU (3.7 mtpa). The largest buildouts in development are taking place in Germany (65.4 mtpa), Italy (23 mtpa), Greece (19.1 mtpa), the United Kingdom (17.8 mtpa), Ireland (11 mtpa), and France (7.9 mtpa) (Figure 10). Europe's gas buildout is in direct conflict with its climate goals, which include reducing emissions by 55% by 2030 with respect to 1990 levels, and could burden the region with costly overcapacity of LNG import infrastructure.

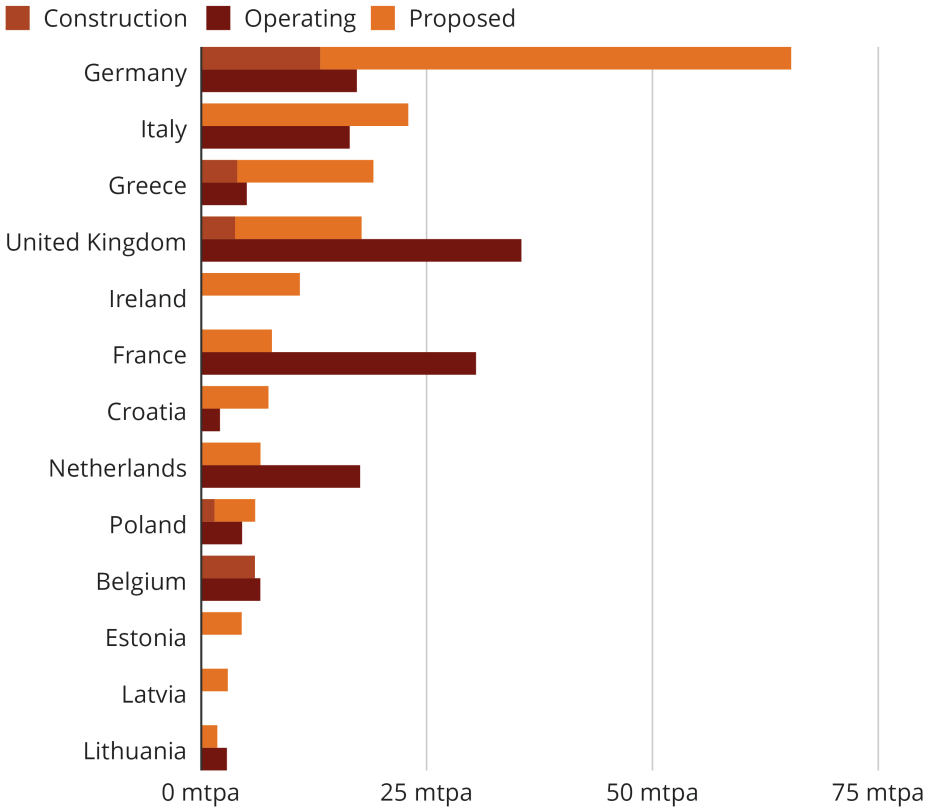
Oil and gas companies have argued that new gas pipelines and LNG import terminals could be repurposed in the future for hydrogen. While hydrogen produced with renewable energy (i.e., green hydrogen) may have limited uses in a low-emissions economy, there are fundamental issues with assuming gas infrastructure can be repurposed for hydrogen, including high costs of revamping existing infrastructure, hydrogen's low efficiency as a fuel, and the emissions associated with most hydrogen production pathways. The EU's sixth list of Projects of Common Interest, offering special access to public funds and accelerated project approvals, includes at least €50 billion in new hydrogen projects that threaten to extend the lifetime of oil and gas infrastructure.

Europe appears to be in a strong position to weather its second winter after the beginning of the gas crisis, with gas storage levels at 96% as of October. As the region's industrial gas demand falls and renewable energy generation rises, there is ample evidence that continued European LNG buildout this decade could be costly, risky, and unnecessary. This November, a Polish import terminal proposal born out of the gas crisis, the second Polish Baltic Sea Coast FSRU, was shelved due to a lack of market interest indicating that the long-term outlook for gas is weakening.

7. See Footnote 4.

Europe's LNG import plans led by Germany, Italy, and Greece

Import capacity of LNG in development, million tonnes per year (mtpa)



Note: Includes countries with at least 1 mtpa of export capacity in development

Source: Global Gas Infrastructure Tracker, Global Energy Monitor

Figure 10

Latin America and the Caribbean

Latin America and the Caribbean (LAC) have 56.9 mtpa of LNG import capacity under development, or 8.1% of the global total, the most in any region outside of Asia and Europe. Brazil is the largest LNG importer in LAC, with operating import terminals totaling 31.2 mtpa and a pipeline of 49.1 mtpa of import projects in development, far more than any other country in the region. Four of these projects already under construction will increase Brazil's import capacity by almost 50%.

Mexico and Argentina could emerge as major LNG exporters given their slates of projects in development. LNG export projects in development in Mexico comprise 69.3 mtpa, the fourth-largest pipeline of such projects in the world, and many of these projects would rely on U.S. gas exports. Two projects in Mexico are already under construction, Costa Azul LNG Terminal Phase 1 (3.25 mtpa) and New Fortress Altamira FLNG Terminal (4.2 mtpa), and the first phase of the 28.2-mtpa Saguaro Energía LNG Terminal could reach FID as early as the end

of this year. However, Mexico's LNG buildout faces significant barriers, including financial constraints and insufficient transport capacity for U.S. feedgas. In Argentina, the completion of the Néstor Kirchner Gas Pipeline has opened the floodgates to new pipelines and export projects drawing gas from the Vaca Muerta gas resource. Chief among them is the proposed Argentina GNL Terminal, with capacity of up to 25 mtpa and an estimated cost of US$50 billion, although, its near-term prospects have been thrown in doubt by the election of the country's new president Javier Milei, who is opposed to state subsidies.

Methodology

Data

Data on LNG terminals are from GEM's Global Gas Infrastructure Tracker (GGIT) as of October 2023.

Cost to build a terminal

GEM has identified reported cost estimates for just over 25% of projects in the GGIT database collected from media, company websites, and other sources. These reported costs are used to estimate the costs of projects for which GEM does not have cost data. To do so, these reported costs are normalized by the capacity of each terminal, to estimate the cost (in USD) to build a terminal per unit mtpa. The upper and lower 10% of outliers are removed from the distribution to provide a more robust average, expansion projects are removed to ensure the costs are based on new builds, and only one cost is used per unique LNG terminal, in cases where multiple trains or phases exist. From there, costs are grouped by project type — import vs. export and onshore vs. floating — as these different facility types carry different capital expenditure costs. For all onshore terminals, regional averages are used if there are at least three data points, and global averages are used otherwise. For all floating terminals, global averages are used. These average cost estimates are used to extrapolate capital expenditure for terminals that do not have reported cost estimates in GGIT. See Table A7 for regional cost averages used for extrapolation.

Background on Global Energy Monitor

Global Energy Monitor (GEM) develops and analyzes data on energy infrastructure, resources, and uses. We provide open access to information that is essential to building a sustainable energy future. Follow us at www.globalenergymonitor.org and on Twitter/X @GlobalEnergyMon.

Background on the Global Gas Infrastructure Tracker (GGIT)

GGIT is an information resource on natural gas transmission pipeline projects and liquefied natural gas (LNG) import and export terminals. The internal GGIT database and wiki pages are updated continuously throughout the year, and an annual release is published and distributed with data summary tables. The data are released under a creative commons license and can be downloaded here.

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Appendix

Table A1. LNG export capacity by region and subregion

Region	Subregion	Proposed (mtpa)	Construction (mtpa)	Proposed+Construction (mtpa)	Shelved (mtpa)	Cancelled (mtpa)	Operating (mtpa)
Africa	Northern Africa		0.1	0.1		5.0	37.5
	Sub-Saharan Africa	102.6	13.5	116.1	10.0	27.4	37.7
Americas	Latin America and the Caribbean	89.6	7.5	97.0		21.6	16.5
	Northern America	322.6	90.1	412.7	6.0	460.8	92.9
Asia	Central Asia						0.2
	Eastern Asia						
	South-eastern Asia	16.7		16.7		3.0	52.6
	Southern Asia		10.8	10.8		64.0	
	Western Asia	30.8	33.0	63.8	22.0	22.6	95.4
Europe	Eastern Europe	131.4	32.7	154.1	16.2	16.4	31.1
	Northern Europe						
	Southern Europe						
	Western Europe						
Oceania	Australia and New Zealand	21.7	5.0	9,90026.7	7.2	45.8	87.6
	Melanesia	9.2		9.2	1.5	6.0	8.3
	Micronesia						
	Polynesia						
Total		724.4	192.7	917.1	62.9	672.5	464.4

Table A2. LNG export capacity by country

Country	Proposed (mtpa)	Construction (mtpa)	Proposed+Construction (mtpa)	Shelved (mtpa)	Cancelled (mtpa)	Operating (mtpa)
United States	262.9	74.0	336.9	6.0	185.6	92.9
Russia	131.4	32.7	164.1	16.2	16.4	31.1
Canada	59.7	16.1	75.8		275.2	0.1
Mexico	61.9	7.5	69.3		5.0	
Qatar	16.0	33.0	49.0			77.4
Mozambique	47.3		47.3			3.4
Australia	21.7	5.0	26.7	7.2	45.8	87.6

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Argentina	25.0		25.0			
Nigeria	15.9	8.0	23.9		22.0	23.0
Mauritania	13.0	2..5	15.5			
Indonesia	12.7		12.7		3.0	23.3
Iran		10.8	10.8		64.0	
Senegal	10.0		10.0			
Tanzania	10.0		10.0			
United Arab Emirates	9.6		9.6		9.6	7.6
Papua New Guinea	9.2		9.2	1.5	6.0	8.3
Israel	5.2		5.2		8.0	
Equatorial Guinea	4.4		4.4		1.9	3.7
Malaysia	4.0		4.0			21.9
Republic of the Congo		3.0	3.0			
Suriname	2.7		2.7			
Cameroon	1.3		1.3		3.5	2.4
Gabon	0.7		0.7			
Morocco		0.1	0.1			
Total	**724.4**	**192.7**	**917.1**	**62.9**	**672.5**	**464.4**

Table A3. Estimated investment in LNG export projects by region and subregion

Region	Subregion	Proposed (US$ billion	Construction (US$ billion)	Proposed+Construction (US$ billion)	Shelved (US$ billion)	Cancelled (US$ billion)	Operating (US$ billion)
Africa	Sub-Saharan Africa	127.4	10.0	137.4	4.0	18.8	35.2
	Northern Africa		0.05	0.05		3.4	22.7
Americas	Northern America	245.6	80.5	326.1	4.0	342.8	72.7
	Latin America and the Caribbean	79.3	3.7	83.0		14.9	6.5
Asia	Western Asia	23.6	28.8	52.4	14.0	21.4	54.1
	South-eastern Asia	25.4		25.4		1.9	34.0
	Southern Asia		10.0	10.0		40.7	
	Central Asia						0.1

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Europe	Eastern Europe	152.4	39.1	191.5	15.7	18.7	47.4
	Northern Europe						6.4
Oceania	Australia and New Zealand	28.4	5.6	34.0	17.3	34.6	180.6
	Melanesia	18.3		18.3	1.2	8.3	19.0
Total		700.4	177.7	878.2	56.1	505.4	478.8

Table A4. LNG import capacity by region and subregion

Region	Subregion	Proposed (mtpa)	Construction (mtpa)	Proposed+Construction (mtpa)	Shelved (mtpa)	Cancelled (mtpa)	Operating (mtpa)
Africa	Northern Africa				6.2	10.6	
	Sub-Saharan Africa	1.5	1.7	3.2	0.9	7.7	2.5
Americas	Latin America and the Caribbean	40.9	16.1	56.9	16.3	25.0	77.1
	Northern America	0.1		0.1		259.5	59.8
Asia	Central Asia						
	Eastern Asia	195.2	113.2	308.4	40.3	52.2	532.4
	South-eastern Asia	38.0	8.6	46.6	27.9	35.2	58.2
	Southern Asia	67.4	30.0	97.4	25.5	72.5	65.5
	Western Asia		2.0	2.0	11.1	8.0	72.8
Europe	Eastern Europe	4.5	1.5	6.0	9.3	7.3	4.6
	Northern Europe	34.4	3.8	38.2		27.2	43.8
	Southern Europe	46.0	4.0	50.0	2.7	47.7	79.9
	Western Europe	66.6	19.2	85.9		12.4	72.0
Oceania	Australia and New Zealand	8.3	2.3	10.6	1.0	1.8	
	Melanesia						
	Micronesia						
	Polynesia						
Total		502.7	202.5	705.2	141.1	566.9	1068.5

Table A5. LNG import capacity by country

Country	Proposed (mtpa)	Construction (mtpa)	Proposed+Construction (mtpa)	Shelved (mtpa)	Cancelled (mtpa)	Operating (mtpa)
China	168.9	99.0	267.9	28.7	43.6	123.0
India	45.2	30.0	75.2	6.0	45.7	47.5
Germany	52.1	13.2	65.4			17.3
Brazil	34.4	14.8	49.1	11.3		31.2
Taiwan	22.8	11.8	34.6			15.5
Italy	23.0		23.0		31.6	16.5
Philippines	14.6	6.8	21.4		2.2	5.0
Greece	15.1	4.0	19.1			5.1
United Kingdom	14.0	3.8	17.8		20.0	35.5
Pakistan	14.9		14.9	6.6	8.0	10.4
Vietnam	10.6	1.5	12.1	11.9	13.0	1.0
Ireland	11.0		11.0		2.9	
Thailand	10.8		10.8	7.0	8.0	19.0
Australia	8.3	2.3	10.6	1.0	1.8	
France	7.9		7.9		12.4	30.5
Croatia	7.5		7.5		7.0	2.1
Netherlands	6.6		6.6			17.6
Poland	4.5	1.5	6.0	3.3		4.6
Belgium		6.0	6.0			6.6
South Korea	3.5	2.4	5.9	11.6		150.7
Bangladesh	4.6		4.6	11.3	18.8	7.6
Estonia	4.5		4.5			
Colombia	4.0		4.0			3.0
Latvia	3.0		3.0		3.6	
Sri Lanka	2.7		2.7	1.7		
Indonesia	2.0	0.3	2.3	1.4	11.2	14.9
Cyprus		2.0	2.0			
Lithuania	1.8		1.8			2.9
Ghana		1.7	1.7			
Nicaragua		1.3	1.3			
Panama	1.1		1.1			1.5
South Africa	1.0		1.0		2.0	
Dominican Republic	1.0		1.0		1.0	1.9

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Mozambique	0.5		0.5			
Montenegro	0.4		0.4			
Ecuador	0.4		0.4			
United States	0.1		0.1		242.3	52.3
Total	502.7	202.5	705.2	141.1	566.9	1068.5

Table A6. Estimated investment in LNG import projects by region and subregion

Region	Subregion	Proposed (US$ billion	Construction (US$ billion)	Proposed+Construction (US$ billion)	Shelved (US$ billion)	Cancelled (US$ billion)	Operating (US$ billion)
Africa	Sub-Saharan Africa	1.0	0.4	1.4	0.1	1.3	0.4
	Northern Africa				4.9	4.1	
Americas	Latin America and the Caribbean	6.1	2.7	8.8	2.1	7.1	16.4
	Northern America	0.02		0.02		70.4	16.4
Asia	Eastern Asia	67.6	38.9	106.5	12.4	18.4	190.3
	Southern Asia	12.6	7.5	20.1	6.0	17.8	19.9
	South-eastern Asia	12.2	2.4	14.6	9.5	12.8	11.3
	Western Asia		0.4	0.4	1.8	2.9	14.7
Europe	Western Europe	16.1	3.0	19.1		5.5	22.9
	Southern Europe	9.7	0.4	10.1	0.4	18.6	33.0
	Northern Europe	6.0	0.8	6.7		7.7	17.1
	Eastern Europe	0.7	0.7	1.4	3.2	1.2	2.1
Oceania	Australia and New Zealand	1.1	0.2	1.3	0.4	0.2	
Total		133.0	57.2	190.2	40.9	167.9	344.4

Table A7. Estimated costs to build a LNG terminal

	Import terminals				Export terminals			
	Onshore		Floating		Onshore		Floating	
Region	Cost (US$ million per mtpa)	Number of data points	Cost (US$ million per mtpa)	Number of data points	Cost (US$ million per mtpa)	Number of data points	Cost (US$ million per mtpa)	Number of data points
Africa	386.3	2	165.3	2	679.2	6	669.4	5
Americas	301.8	4	165.3	13	634.6	7	669.4	4
Europe	444.7	7	165.3	19	1150.1	8	669.4	2
Oceania	386.3	0	165.3	4	770.0	6	669.4	0
Global	386.3	35	165.3	38	783.5	61	669.4	18