

# The Economic Case for LNG in Asia is Crumbling

## *Unaffordable Prices Expected to Slow LNG Demand Growth in Key Markets*

### Executive Summary

The global liquefied natural gas (LNG) industry has long counted on robust demand growth from Asia to justify its worldwide expansion plans. Prior to 2022, mainstream forecasts projected that more than half of global LNG demand growth through 2025 would come from developing economies in South and Southeast Asia.<sup>1</sup>

But a tumultuous year in global LNG markets has eroded these expectations. Sustained high prices and competition for limited supplies have undermined the economic case for LNG and cut LNG sales in Asia.

Meanwhile, a renewed interest in domestically-sourced alternatives to imported LNG in the power sector is offering an economically competitive off-ramp from LNG-to-power projects throughout the region. Should LNG price spikes and volatility continue over the next several years, downward pressures on Asian LNG demand are likely to accelerate, permanently impairing long-term LNG demand growth.

High prices and unreliability of supply are undermining industry-driven narratives that LNG is a viable “bridge fuel” from coal. Demand forecasting agencies are taking note. In its latest gas market update, the International Energy Agency (IEA) was blunt:

*“Today’s record prices and supply disruptions are damaging the reputation of natural gas as a reliable and affordable energy source, casting uncertainty on its prospects, particularly in developing countries where it had been expected to play a growing role in meeting rising energy demand and energy transition goals.”<sup>2</sup>*

The IEA now expects natural gas demand to shrink year-on-year (y/y) in 2022, with 60% less demand growth through 2025 than in the previous five-year period.<sup>3</sup> In the first seven months of 2022, LNG imports in Asia have fallen more than 6% y/y.

This dramatic shift can be traced directly to Europe’s surging demand for LNG. European nations have turned to LNG to reduce dependence on Russian pipeline imports, sparking a bidding war for limited global LNG supplies that has made it impossible for some developing nations to obtain LNG at an affordable price. The

<sup>1</sup> Bloomberg New Energy Finance (BNEF). Global LNG Outlook 2021-2025, p. 5. June 7, 2021.

<sup>2</sup> IEA. [Gas Market Report, Q3-2022](#). July 2022.

<sup>3</sup> IEA. [Gas Market Report, Q3-2022](#). July 2022.

Russian invasion of Ukraine has exacerbated LNG price spikes and procurement challenges.

Many market analysts anticipate buying activity in Asia will simply recover once new supply capacity comes online and prices fall.<sup>4</sup> But significant new global LNG supply capacity is not expected online until 2026, meaning that the market could remain tight for the next several years.

**Continuous demand growth at persistently high prices will likely prove fiscally unsustainable for emerging markets.**

Continuous demand growth at persistently high prices will likely prove fiscally unsustainable for emerging markets.<sup>5</sup> Efforts to reduce LNG dependence and shift toward alternative energy sources in the medium-term could negatively impact longer-term LNG demand growth forecasts.

Financiers and investors in new LNG projects must watch closely. On the import side, unaffordability of LNG and fuel supply insecurity may cause new import terminals to go unused, resulting in potentially billions of dollars in stranded assets.<sup>6</sup> For example, as long as unaffordable LNG prices and procurement challenges persist, US\$96.7 billion dollars of proposed LNG-related infrastructure projects in Pakistan, Bangladesh, Vietnam, and the Philippines will face a heightened risk of underutilization or cancellation.<sup>7 8</sup>

For new LNG export projects, uncertain demand growth undermines the need for liquefaction assets. In mature markets like Japan and South Korea, demand forecasts rely on well-defined seasonal patterns, weather, and storage levels, among other factors.

With emerging markets, however, demand forecasting is based on a different set of variables. For example, will countries be able to obtain and afford LNG? Will import projects be completed on schedule or face regulatory barriers and delays?

These uncertainties are particularly relevant in such a tight, volatile market. Rapid LNG demand growth, especially in emerging Asia, is not a given when LNG prices are uncompetitive with domestic energy alternatives. If prospective demand does not materialize, exporters may find themselves with a smaller pool of buyers, which could ultimately mean lower prices and lower than anticipated profit margins for LNG exporters when new liquefaction projects come online.

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<sup>4</sup> Petroleum Economist. [Asian LNG demand sees 'retracement' not 'destruction'](#). May 24, 2022.

<sup>5</sup> IEEFA. [Emerging Asia's unrealistic LNG-to-power project pipeline threatens macroeconomic and financial stability](#). December 15, 2021.

<sup>6</sup> IEEFA. [Over US\\$50 billion in gas power projects and LNG import facilities at risk of cancellation in Bangladesh, Pakistan and Vietnam](#). January 14, 2021.

<sup>7</sup> Investment figures are from "Global Energy Monitor. [Asia's Gas Lock-In](#). October 2021."

<sup>8</sup> See also, "IEEFA. [Gas and LNG Price Volatility To Increase in 2021](#). January 2021."

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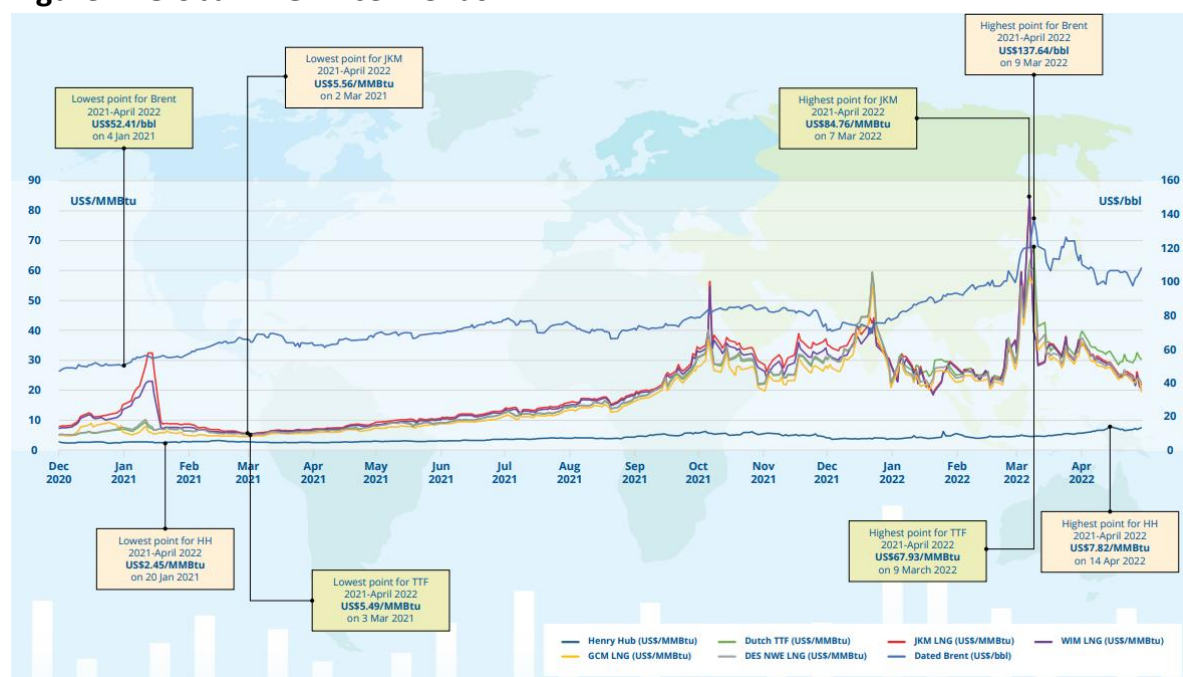
## Global Supply-Demand Picture

### LNG Market Tightness Expected to Persist for Several Years

Beginning in late 2021, Russia began to curtail shipments of gas to Europe, and European buyers turned to LNG to backstop faltering supplies of pipeline gas. As European LNG demand rose, global LNG prices spiked to levels that, at the time, were some of the highest on record.

But after Russia's invasion of Ukraine last February, global LNG prices jumped even higher, with the Japan-Korea Marker (JKM)—the benchmark spot price in Asia—hitting a record US\$84.76/MMBtu (see Figure 1 below).

**Figure 1: Global LNG Price Trends**



Source: International Gas Union. 2022 World LNG Report. July 2022.

For much of 2022, prices at the Title Transfer Facility (TTF)—the European spot benchmark—have traded at a premium to Asian prices. These price premiums attracted more LNG supplies to wealthy European buyers, leaving many Asian buyers, particularly those in developing countries, unable to compete.

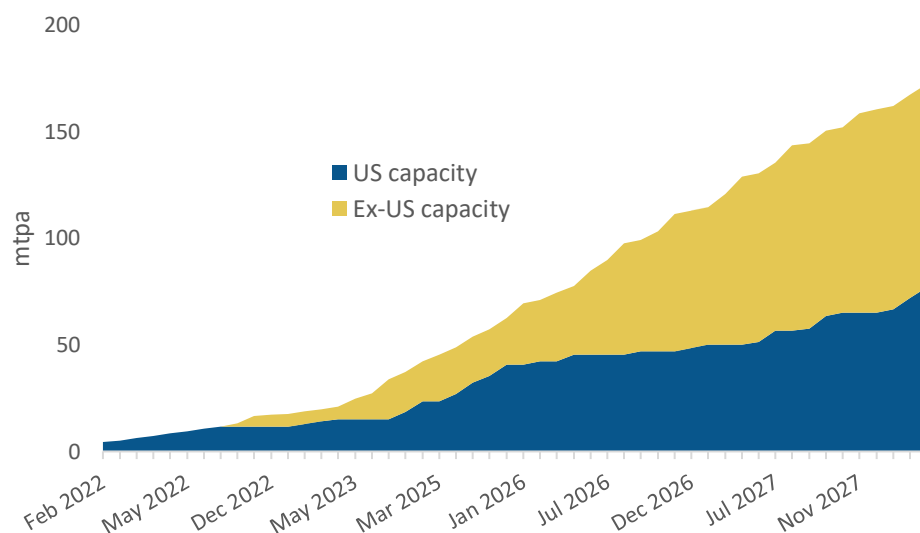
Global LNG prices are unlikely to settle anytime soon.<sup>9</sup> Significant new LNG supply additions are not expected online until 2025-2026, when Qatar expects to

<sup>9</sup> In a previous brief, IEEFA discussed several reasons that global LNG prices would remain high and volatile over the next several years. IEEFA. [Now is Not the Time to Build More LNG Import Terminals in Asia](#). March 2022.

commission its mega-LNG expansion of 32 million tons per annum (mtpa) of additional capacity (see Figure 2 below).

Representatives from the International Group of LNG Importers, an LNG lobbying organization, expect a tight market for at least the next three years,<sup>10</sup> while several industry executives are not expecting prices to ease until the end of the decade.<sup>11</sup> Until prices ease, Asian buyers will have to continue to compete with Europe for existing supplies.<sup>12</sup>

**Figure 2: New Global LNG Supply Capacity**



Source: IHS Markit, IEEFA.

In the meantime, myriad global factors could drive LNG prices higher. Continued Russian cuts to pipeline gas exports into Europe could force European buyers further into LNG markets, adding upward price pressure to available cargoes.<sup>13</sup>

In such a tight market, persistent outages at LNG liquefaction facilities are also likely to continue to jolt prices. According to geanalytics firm Kayrros, outages since June 2022 have removed nearly 30 mtpa of supply—or 8% of global production—from the global market (see Figure 3 below).<sup>14</sup> <sup>15</sup> In 2021, outages at LNG liquefaction facilities reached 41 mtpa—the highest level on record—highlighting the unreliability of global LNG supply.

<sup>10</sup> Bloomberg. [Gas Crunch to Haunt Europe for Winters to Come, LNG Lobby Says](#). July 6, 2022.

<sup>11</sup> Straits Times. [Global LNG supply crunch to ease towards end of decade: Industry execs](#). July 7, 2022.

<sup>12</sup> Construction lead times average roughly 4-5 years for new export projects.

<sup>13</sup> Bloomberg. [Global LNG Competition Intensifies on New Russia Supply Cut](#). July 25, 2022.

<sup>14</sup> Half, Antoine. “#Russia's latest step to cut #gas supply to Europe comes as a string of outages have idled as much as 30Mtpa of #LNG capacity in the last few weeks, or ~8% of global production. @Kayrros reports of LNG train outages since June 1st.” [Twitter](#). July 26, 2022.

<sup>15</sup> Politico. [Gas price soars as Gazprom throttles flows to Europe](#). July 27, 2022.

**Figure 3: Outages at LNG Liquefaction Facilities Since June 1, 2022**

Country	Facility	Train	Outage Date	Date Restarted
Algeria	Skikda	GL1K	20 July 2022	
Trinidad and Tobago	Atlantic LNG	Train 2	12 July 2022	
Australia	Prelude LNG	All trains	10 July 2022	
Russia	Sakhalin	Train 2	29 June 2022	6 July 2022
Australia	Queensland Curtis LNG	Train 1	21 June 2022	
Egypt	Idku	Train 2	20 June 2022	
United States	Freeport LNG	All trains	8 June 2022	
Egypt	Idku	Train 1	5 June 2022	
Qatar	Qatargas	Train 5	3 June 2022	7 June 2022
Angola	Angola LNG	Train 1	2 June 2022	7 July 2022

Source: Kayrros.

Severe weather is another risk factor that could exacerbate market tightness and drive prices higher in the near-term. Record-setting heat waves throughout the U.S., Europe, and China have driven up demand for LNG and hindered the ability of buyers to rebuild gas inventories ahead of peak winter months. Severe winter weather in 2022 could increase prices further and cause greater economic pain for LNG importers.<sup>16</sup>

To make matters worse, meteorologists anticipate a third consecutive year of La Niña, a climate pattern that brings colder weather in the Northern Hemisphere, especially in Northeast Asia.<sup>17</sup> According to the journal *Nature*, La Niña will also “probably increase Atlantic hurricane activity,” increasing outage risks for LNG supply facilities.<sup>18</sup>

### *Cracks in Natural Gas and LNG Demand Growth Are Starting to Show*

Less than a year after LNG prices started to rise dramatically in September 2021, several forecasting agencies have already started to revise Asian demand forecasts downward. Should high prices persist through 2025-26, downward pressures on natural gas demand growth in Asia are likely to accelerate.

According to IEA forecasts, overall global natural gas demand, including both LNG and pipeline gas, is expected to contract in 2022 by 0.5%. Demand is then expected to grow by an average rate of 0.8% per year through 2025, resulting in a total addition of 140 Billion cubic meters (Bcm) from 2021 to 2025. This is just over one-third of the demand growth in the previous five-year period of 370 Bcm.<sup>19</sup> From 2021-2024, the IEA anticipates just 0.6% annual global natural gas demand growth,

<sup>16</sup> Rystad Energy. [A perfect and unavoidable storm: LNG supply crisis will make landfall in winter 2022](#). May 9, 2022.

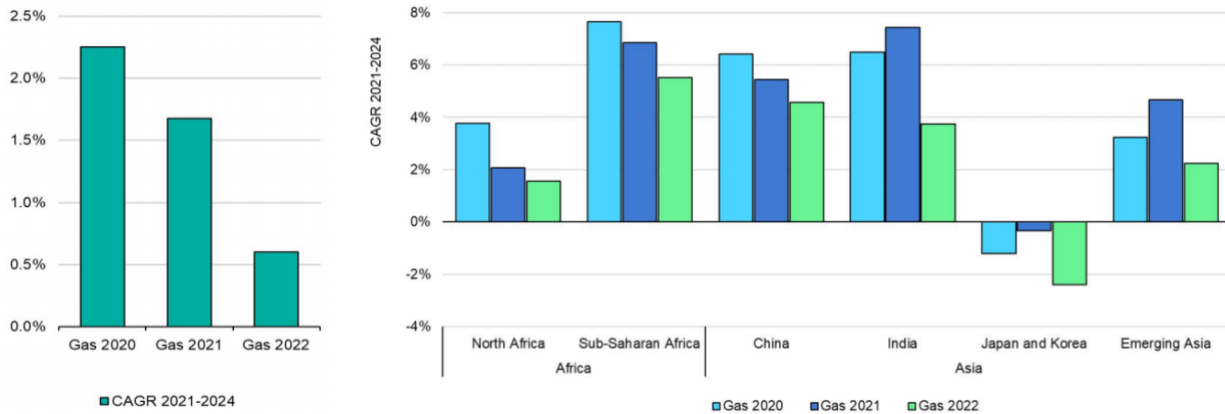
<sup>17</sup> National Weather Service, Climate Prediction Center. [El Niño/Southern Oscillation \(ENSO\) Diagnostic Discussion](#). July 14, 2022.

<sup>18</sup> *Nature*. [Rare ‘triple’ La Niña climate event looks likely — what does the future hold?](#) June 23, 2022.

<sup>19</sup> IEA. [Gas Market Report, Q3-2022](#), p. 32. July 2022.

a 60% decrease from previous growth forecasts over the same period (see Figure 4 below).

**Figure 4: IEA’s Downward Revisions to Global (Left) and Regional (Right) Gas Demand Forecasts**



Source: IEA.

IEA still expects the Asia Pacific region to drive medium-term global gas demand growth, with China, India, and emerging Asia as the primary growth markets. Yet each of these markets faces significant downside risks, owing mainly to uncertainty in LNG supplies and pricing.

The downside risks for emerging Asia are particularly stark. The IEA revised emerging Asian natural gas demand growth from 2021-2025 downward by 50% compared to the previous year’s forecast “to reflect the particular sensitivity of the region’s appetite for gas to sustained high LNG prices over the medium-term.”

Sustained high prices over the next several years “could further derail Emerging Asia’s gas and LNG demand growth prospects, and leave much of the region’s planned new LNG-to-power infrastructure further delayed or even uncompleted.”

A comparison of the IEA’s gas update from 3Q 2021 and 3Q 2022 shows that in one year the agency’s natural gas demand forecasts in Asia have fallen by a total of 65 Bcm (51 million tons) over the medium-term.



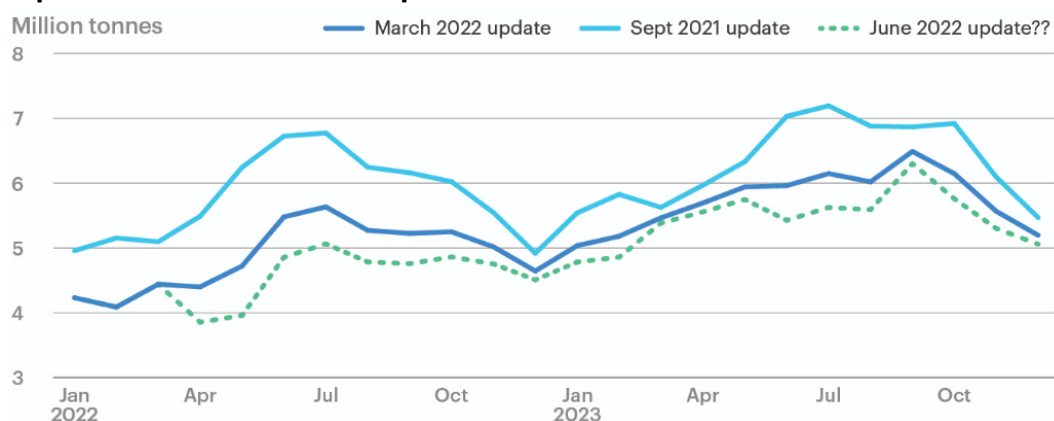
**Figure 5: Comparison of IEA’s Medium-term Natural Gas Demand Growth Forecasts in Asia (3Q21 vs. 3Q22; Units in Bcm)**

Report (release Date)	IEA Gas Market Update Q3 2021 (July 2021)	IEA Gas Market Update Q3 2022 (July 2022)
Forecast Period	2020-2024	2021-2025
Japan and Korea	-1	-13
China	95	74
India	25	13
Emerging Asia	41	21
<b>Total Incremental Demand Growth</b>	<b>160</b>	<b>95</b>
<b>Total Revision to IEA Demand Growth Forecast</b>	<b>-65</b>	
<b>Percentage Change in IEA Growth Forecast</b>	<b>-41%</b>	

Source: IEA Gas Market Update Q3 2021 and Q3 2022. Note: Figures represent incremental demand growth over the forecast period. Figures for Japan and Korea are estimated based on percentage reductions provided by IEA forecasts.

Other forecasting agencies are projecting slower growth in gas demand, particularly in price sensitive emerging markets. In March, the Independent Commodity Intelligence Service (ICIS) forecast that high prices over the next two years would destroy 23.11 Bcm (18 mt) of LNG demand in Southeast Asia, South Asia, and South American markets,<sup>20</sup> with further downward revisions expected if global LNG prices remain high (see Figure 6 below).<sup>21</sup>

**Figure 6: ICIS Developing Nations’ LNG Demand Destruction: Sept 2021 vs. March 2022 Update**



Source: ICIS.

Energy research firm Rystad Energy has also warned of looming demand destruction as a result of high LNG prices. According to LNG Senior Analyst Kaushal Ramesh, “We see the risk of permanent LNG demand destruction in some countries that could hang on to coal and fuel oil and jump straight to renewables a few years

<sup>20</sup> ICIS. Gas poverty: How prolonged high spot gas prices is destroying the LNG demand of the developing nations of South Asia, Southeast Asia and South America. March 24, 2022.

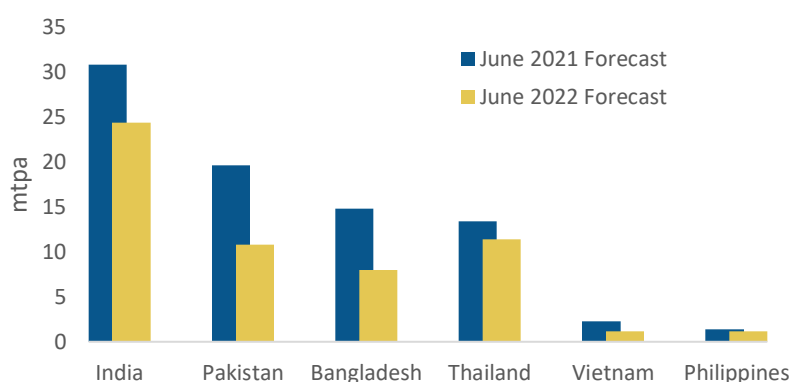
<sup>21</sup> Ibid.

down the road. That is unless more competitively priced LNG is made available to them soon.”<sup>22</sup>

Bloomberg New Energy Finance (BNEF) has also cut its forecasts for medium-term Asian LNG demand growth. In its June 2022 LNG Outlook, the group revised its demand projections downward from its previous outlook for every South and Southeast Asian market through 2025 (see Figure 7 below).<sup>23</sup>

This represents a cut of 29 million tons. BNEF expects that moderate to severe gas shortages could occur in Pakistan, Bangladesh, and Thailand through 2026. By contrast, the group raised its forecast for Chinese LNG demand growth over the period to 22 million tons—a 3-million-ton increase—due mainly to greater coal-to-gas switching and economic growth.

**Figure 7: BNEF Forecast Revisions for South and Southeast Asian LNG Demand in 2025**



Source: BNEF. *Global LNG Market Outlook 2022-26*. June 16, 2022.

The IEA still expects LNG to be the main driver of the global gas market, with LNG trade increasing by 17% in 2025 compared to 2021. However, the agency forecasts that demand will grow by just 4% annually, down from the 7% annual growth rate from 2017 to 2021.

In 2022, LNG demand in Asia has fallen almost more than 6% in the first seven months of 2022, from 161.4 to 151.4 mtpa (see Figure 8 below). Much of this year-on-year decline is due to lower demand in China. However, as the market remains tight and prices remain high over the next several years, growth rates throughout Asia may decline further.

<sup>22</sup> Al Jazeera. [Russia gas cuts stoke Asia's energy security fears](#). July 29, 2022.

<sup>23</sup> Bloomberg New Energy Finance. *Global LNG Market Outlook 2022-26*. June 16, 2022.

**Figure 8: LNG Demand in Asia has Plummeted in the First Six Months of 2022**



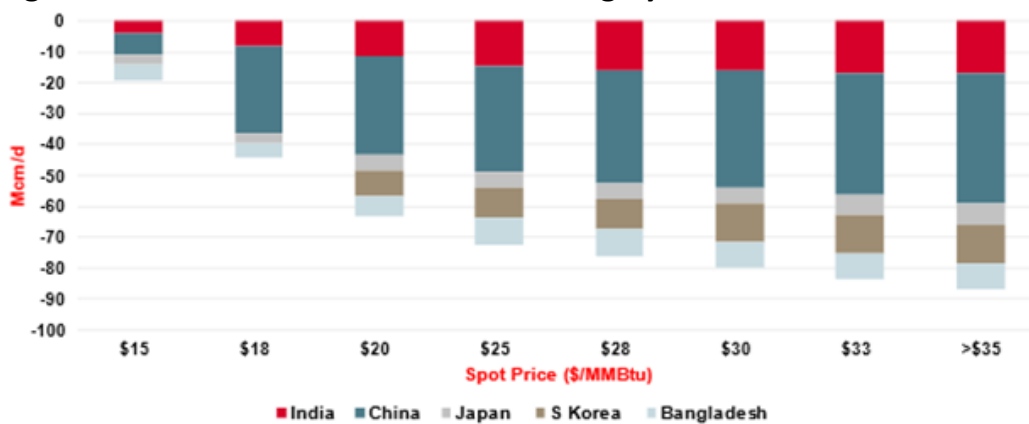
Source: IHS Markit.

### Demand for LNG at High Prices is Unsustainable

The exact price at which buyers will decline to purchase LNG depends on numerous factors, including the importance of gas in a country’s economy, a country’s exposure to spot markets versus long-term contracts, and the availability of alternative energy sources, among many other economic factors.

According to recent analysis from IHS Markit, the majority of spot market purchases by South Asian buyers, for example, tend to occur when prices are at or below US\$10/MMBtu.<sup>24</sup> The analysis notes, however, that the correlation is imperfect. In Bangladesh and Pakistan, natural gas accounts for 68% and 42% of primary energy demand, respectively, meaning that these countries face little choice but to purchase expensive cargoes. If prices fall from current levels of ~US\$52/MMBtu to US\$20/MMBtu,<sup>25</sup> countries may jump at the opportunity to purchase more relatively affordable volumes. Figure 9 below shows S&P Global’s estimates of LNG demand destruction at various spot market prices.

**Figure 9: Asian LNG Demand and Switching by Price Estimates**



Source: S&P Global Commodity Insights LNG.

<sup>24</sup> IHS Markit. How sensitive is South Asian LNG demand to price shifts? May 18, 2022.

<sup>25</sup> Bloomberg. Asian Gas Prices Extend Surge on Renewed Effort to Secure Supply. July 28, 2022.

Many price-sensitive countries now face a choice between purchasing unaffordable LNG volumes or foregoing fuel purchases altogether. To the extent possible, countries may try to avoid fuel and power shortages by paying prices that may previously have been unreasonable.

**Unaffordable LNG is just one factor that could inhibit rapid demand growth in emerging markets.**

This is likely to prove financially unsustainable. Pakistan reportedly faces a high risk of default, as concerns mount that a US\$1.2 billion bailout from the International Monetary Fund may not be enough to avert a balance of payments crisis.<sup>26 27</sup> Pressure on Bangladesh's economy is also mounting, as higher energy and food prices inflate the country's import bill and current accounts deficit. The country recently requested a US\$4.5 billion IMF loan for balance of payment and budgetary needs.<sup>28</sup>

Should global LNG prices remain high for several years, countries will face mounting fiscal challenges due to costly fossil fuel subsidies, pressure from lenders and international financial institutions to rein in expensive LNG imports, and political demands to reduce energy prices by shifting towards domestic energy alternatives.

Importantly, unaffordable LNG is just one factor that could inhibit rapid demand growth in emerging markets. Other factors include project and country-level risks, such as the credibility of project sponsors, the financial strength of LNG offtakers, the efficacy of energy sector planning, governance and regulation, and opposition from civil society, among many other factors.

Financial market constraints related to the ability of the project finance lending market to provide capital for LNG import projects could also stymie demand growth in emerging markets. IEEFA has previously estimated that 66% of LNG-related projects in emerging Asia were unlikely to be built due to project, country, and financial market risks.<sup>29</sup>

## China

The LNG industry is pinning its hopes for growth on China, South Asia, and Southeast Asia. Together, these markets are expected to add roughly 250 Bcm of incremental LNG demand through 2040.<sup>30</sup>

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<sup>26</sup> Bloomberg. [Hunger and Blackouts Are Just the Start of an Emerging Economy Crisis](#). April 20, 2022.

<sup>27</sup> Financial Times. [Pakistan's rupee falls fast as default fears intensify](#). July 22, 2022.

<sup>28</sup> Reuters. [Bangladesh seeks \\$4.5 bln IMF loan as deficit widens, newspaper says](#). July 26, 2022.

<sup>29</sup> IEEFA. [Examining Cracks in Emerging Asia's LNG-to-Power Value Chain](#). December 1, 2021.

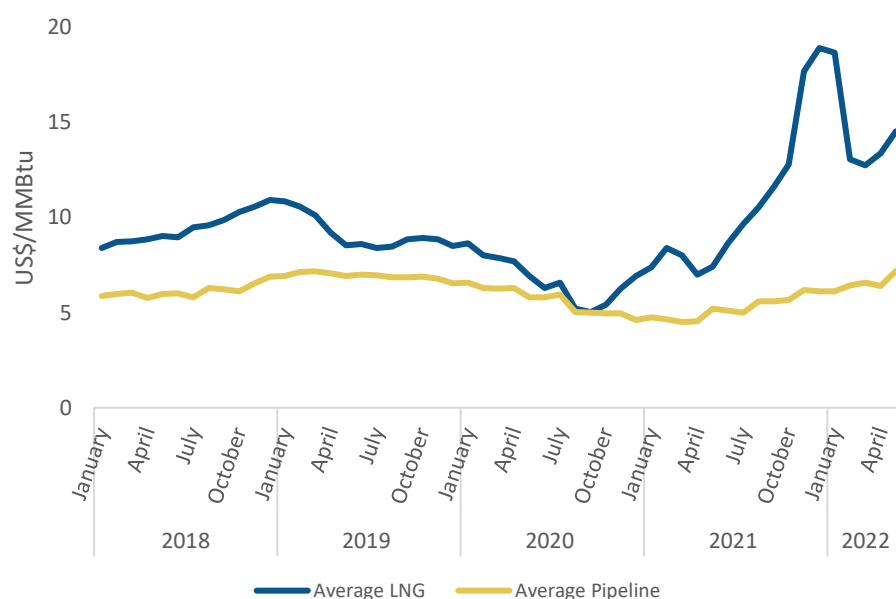
<sup>30</sup> Shell. [LNG Outlook 2022](#), p. 28. 2022.

In 2021, China became the world's largest importer of LNG,<sup>31</sup> but the spot was temporary. In 2022, the country's LNG demand is expected to fall to 69 million tons—a 14% y/y drop—due to high LNG prices, slower economic growth and COVID-19 lockdowns, and an increase in coal and renewables for power generation.<sup>32</sup> In the first 6 months of 2022, LNG purchases have fallen 20% y/y.

Sporadic lockdowns due to COVID-19 could continue to dampen LNG demand growth this year. While a resurgence of economic activity could cause an uptick in LNG purchases, signs of a more permanent shift away from LNG are starting to show. In 2021, the IEA expected China's natural gas demand to grow 95 Bcm from 2020-2024.<sup>33</sup> As of July 2022<sup>34</sup>, the agency expects China's natural gas demand to grow by 74 Bcm through 2025—22% less than the previous forecast.

Pipeline imports of natural gas may account for an increasing share of that demand growth, replacing expensive LNG. Despite significant drops in LNG demand in 2022, pipeline imports from Russia were up 60% in the first quarter of 2022.<sup>35</sup> This is due largely to the fact that pipeline imports into China were roughly half the price of LNG imports in May 2022 and a third of the LNG price in December 2021, before the Russian invasion of Ukraine (see Figure 10 below).

**Figure 10: Average Prices of LNG vs. Pipeline Gas Imports into China (Jan 2018-May 2022)**



Source: IHS Markit.

<sup>31</sup> ICIS. [China overtakes Japan as world's largest LNG importer](#). June 30, 2021.

<sup>32</sup> Bloomberg. [China to Post Record Decline in LNG Imports as Economy Slows](#). July 18, 2022.

<sup>33</sup> IEA Natural Gas Quarterly Report Q3 2021.

<sup>34</sup> IEA. [Gas Market Report, Q3-2022](#). July 2022.

<sup>35</sup> South China Morning Post. [Russian natural gas exports to China jump 60 per cent in first 4 months](#). May 2, 2022.

The Power of Siberia Pipeline is currently the only existing gas pipeline between Russia and China, with a total capacity of 38 Bcm/y.<sup>36</sup> However, only 10 Bcm were delivered through the pipeline in 2021,<sup>37</sup> with plans to reach full capacity by 2025.

Moreover, there are plans to expand pipeline capacity with Russia by roughly 70 Bcm/y, as well as plans for an additional 30 Bcm/y of pipeline capacity from Turkmenistan through the proposed Central Asia Gas Pipeline Line D.

Although this latter plan has been delayed repeatedly since 2013,<sup>38</sup> Chinese officials are accelerating regional pipeline developments given the high price LNG environment. Negotiations surrounding new pipeline proposals are complex and politically sensitive, but acceleration of these plans could negatively impact China's LNG demand.

**Figure 11: Proposed Pipeline Gas Import Projects into China**

	Power of Siberia 1 Expansion	Power of Siberia 2	Far East Pipeline	Central Asia-China Gas Pipeline D
Source	Russia	Russia	Russia	Turkmenistan
Additional Capacity (Bcm/y)	10	50	10	30
New Pipeline Required	None. New compressors required.	2,600 km	580 km	966 km
Target Construction Start Date	Uncertain	2024	Uncertain	Under construction since 2018
Status	China to accelerate construction in 2022	Design begun; construction targeted for 2024	Gazprom-CNPC gas supply contract signed Feb 2022	Construction suspended in 2020. President Xi announces desire to accelerate construction in Jan 2022.
Expected Completion Timeline	2-3 years	5-6 years	2-3 years	5-6 years

Source: Compiled by IEEFA from various media reports, Global Energy Monitor, The People's Map of Global China, Valdai Club, IHS Markit.

China's LNG demand is also coming under significant price pressure from new coal and renewables. Strong ramp up of low-cost renewables capacity is cutting into dispatch rates of more conventional baseload generation sources, such as coal, gas, and nuclear. China is on pace to deploy 120GW of new renewables capacity this year, exceeding the previous five-year average capacity additions by 40%.<sup>39</sup> Solar additions, in particular, reached 31GW in 1H22, up 137% y/y.<sup>40</sup>

<sup>36</sup> Nikkei Asia. [China turns to Russian gas to curb dependence on Quad members](#). March 12, 2022.

<sup>37</sup> Ibid.

<sup>38</sup> Radio Free Asia. [China's Gas Supplies Shadowed by Stalled Pipeline](#). June 24, 2016.

<sup>39</sup> IHS Markit. [China's energy markets during latest COVID-19 lockdown](#), p. 4. May 31, 2022.

<sup>40</sup> Reuters. [China solar installations more than double in first half – assn](#). July 21, 2022.

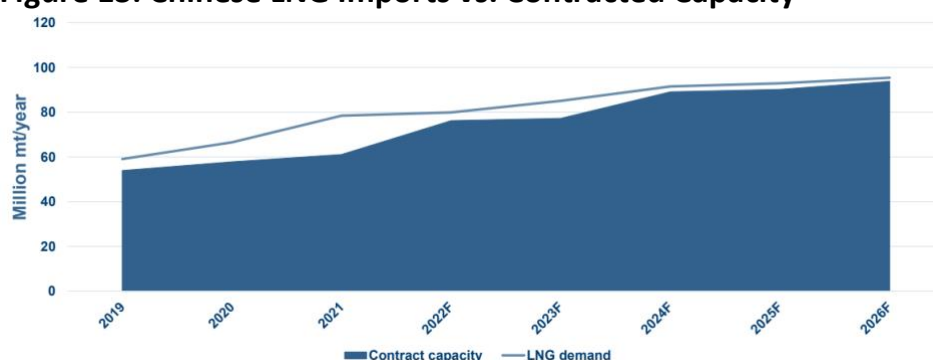
**Figure 12: LNG Sales and Purchase Agreements Signed by Chinese Buyers in 2022**

Date	Deal Type	Buyer	Seller	Project	Volume	Length
10-Jan	SPA	Foran Energy	BP	BP Portfolio	0.075	10
11-Jan	SPA	ENN Energy	NOVATEK	NOVATEK Portfolio	0.6	11
29-Mar	SPA	ENN Energy	Energy Transfer	Lake Charles LNG	2.7	20
31-Mar	SPA	Guangzhou Development Group	Mexico Pacific Ltd.	Mexico Pacific Ltd.	2	20
6-Apr	SPA	ENN Energy	NextDecade	Rio Grande LNG	1.5	20
6-Jun	SPA	China Gas	Energy Transfer	Lake Charles LNG	0.7	25
5-Jul	SPA	China Gas	NextDecade	Rio Grande LNG	1	20
6-Jul	SPA	Guangdong Energy Group	NextDecade	Rio Grande LNG	1	20
20-Jul	SPA	PetroChina	Cheniere	Cheniere (Portfolio)	1.8	25
<b>Total</b>					<b>11.375</b>	
<b>Average Length</b>						<b>19</b>

Source: IEEFA, compiled from media reports.

Chinese buyers have signed multiple long-term sales and purchase agreements (SPAs) in 2022, indicating that they are looking to secure supply volume and costs (see Figure 12 above). While contracts are likely to underpin future LNG demand, the large volume of contracts signed this year do not indicate that the rate of demand growth will accelerate over the next several years. Instead, recent contract signings suggest that Chinese buyers are looking to meet demand growth with term volumes rather than spot purchases (see Figure 13 below).

**Figure 13: Chinese LNG Imports vs. Contracted Capacity**

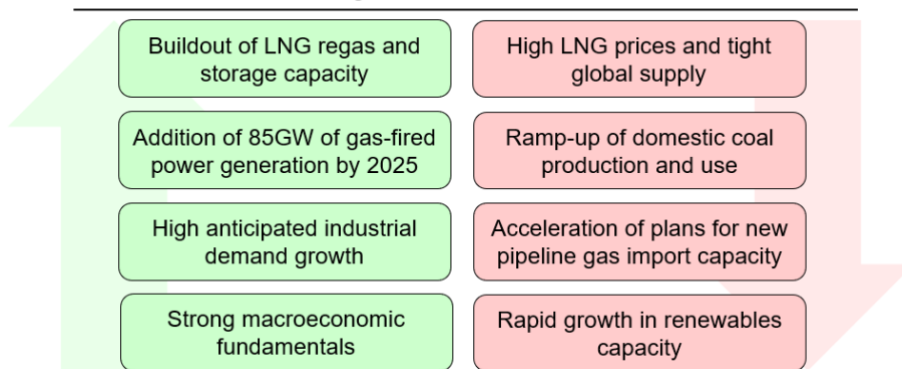


Source: S&P Global.

China will likely continue to be a major growth market for LNG demand over the coming years. However, China is proving to be a highly unpredictable, price elastic buyer of LNG. For example, Chinese importers are not procuring spot LNG cargoes ahead of winter 2022 due to high prices.<sup>41</sup> Prolonged high LNG prices could cause the government to further accelerate energy plans that limit the country's longer-term LNG demand growth outlook.

<sup>41</sup> Bloomberg. [China Going Quiet on LNG Hides Risk That May Upend Global Market](#). July 26, 2022.

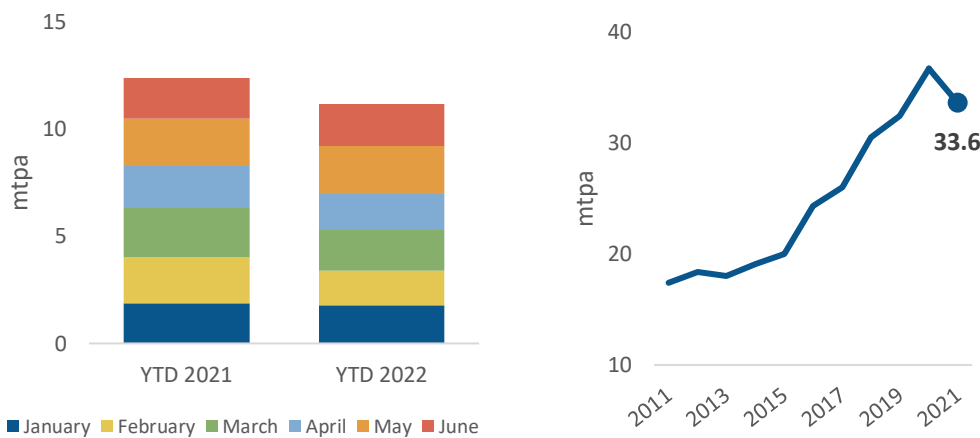
### China: Major LNG Demand Drivers



## South Asia

The main South Asian LNG markets of India, Pakistan, and Bangladesh were also expected to be significant drivers of LNG demand growth in the coming decades, but LNG imports are becoming financially unsustainable. India witnessed a steep 10% y/y drop in LNG imports in the first half of 2022 (see Figure 14 below), as the country undergoes a resurgence of domestic gas production and power and refining sectors shift to cheaper fuels.

**Figure 14: India’s LNG Imports Have Fallen in 2022; India’s Annual LNG Imports**



Source: IHS Markit; BP Statistical Review of World Energy 2022.

The IEA anticipates that India will meet roughly two-thirds of its incremental gas demand through 2025 with domestically produced gas, with the remainder met by imported LNG. Notably, the IEA expects the country’s total LNG demand in 2025 to remain below a peak in 2020 “as high prices discourage greater LNG use in the years



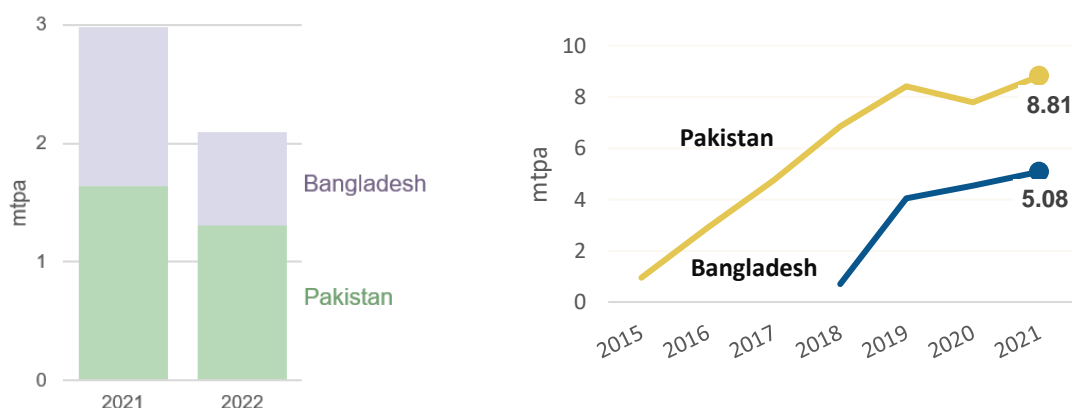
ahead” (see Figure 14 above).<sup>42</sup> This suggests that India’s annual LNG demand could remain flat or even decline in the years ahead.

LNG deliveries to Pakistan and Bangladesh in the first seven months of 2022, meanwhile, are down 8% and 4% y/y, respectively. But even maintaining these LNG import levels to avoid fuel shortages and power outages has incurred significant fiscal stress. Both countries have avoided spot market purchases, opting instead to maximize cargoes delivered under long-term contracts (see Figure 15 below).

In Bangladesh, for example, state-run LNG importer Petrobangla announced a plan in May 2022 to purchase 18 LNG cargoes from the spot market over the July-December 2022 period.<sup>43</sup> In July, however, Petrobangla reversed course and said it would not purchase any spot cargoes for the next several months due to skyrocketing prices.<sup>44</sup> This is despite the fact that energy demand in the country is soaring to summer peaks, and the country has instituted nationwide load-shedding measures that could remain until winter.<sup>45</sup>

As a result of soaring LNG prices, Bangladesh’s LNG import bill is expected to skyrocket to Taka 40,000 crore (US\$4.6 billion) by June 2022—more than double the previous fiscal year.<sup>46</sup> Government gas subsidies have risen 54% y/y to Tk. 82,745 crore (US\$9.4 billion),<sup>47</sup> straining the federal government’s fiscal resources and deepening the country’s currency and foreign exchange challenges.

**Figure 15: Bangladesh and Pakistan LNG Spot Market Purchases; Annual LNG Imports**



Source: IHS Markit.

South Asian countries are also struggling with the energy insecurity of LNG import dependence. Contracted suppliers Eni and Gunvor have defaulted on LNG cargo

<sup>42</sup> IEA. [Gas Market Report, Q3-2022](#), p. 39. July 2022.

<sup>43</sup> The Financial Express. [BD plans to import 18 LNG cargoes from spot mkt](#). May 31, 2022.

<sup>44</sup> Reuters. [Bangladesh halts expensive spot LNG imports despite load-shedding](#). July 20, 2022.

<sup>45</sup> Reuters. [Bangladesh halts expensive spot LNG imports despite load-shedding](#). July 20, 2022.

<sup>46</sup> IEEFA. [Global LNG outlooks point to rough waters ahead for Bangladesh](#). June 9, 2022.

<sup>47</sup> IEEFA. [Global LNG outlooks point to rough waters ahead for Bangladesh](#). June 9, 2022.

deliveries to Pakistan at least 11 times since 2021,<sup>48</sup> forcing Pakistan to issue emergency tenders for supply. In India, Russia's Gazprom skipped eight scheduled LNG shipments to GAIL India Ltd. between May and July 2022.<sup>49</sup>

Non-delivery of cargoes results in fuel shortages. Pakistan has imposed nationwide load shedding of up to 14 hours per day, as the generation shortfall reaches 8 GW. Gas rationing to the textile sector has resulted in a loss of US\$1 billion in export orders. GAIL India Ltd., India's largest gas distributor, has begun rationing gas by cutting supplies to fertilizer and industrial sectors.<sup>50</sup>

Faced with limited supplies, countries have been forced to purchase LNG volumes at exorbitant prices when they are available. Pakistan was able to secure spot market volumes from May to June 2022 at prices between US\$24.15-31.78/MMBtu.<sup>51</sup> This is roughly 2-3 times what the country would have paid for cancelled long-term contract volumes. In June, GAIL purchased a spot market cargo for US\$38/MMBtu, well above its contracted prices of US\$12-14/MMBtu.<sup>52</sup>

Recently, however, attempts to buy LNG from spot markets have failed to attract any bids. In a tender for 10 spot cargoes from July to September, state-owned LNG buyer Pakistan LNG Ltd. received no bids.<sup>53</sup> This was the fourth straight unawarded LNG tender in Pakistan, suggesting that the country's LNG imports may start to fall over the rest of the year. In India, a recent spot market tender from IndianOil also reportedly received zero bids.<sup>54</sup>

Long-term contracts at affordable prices are also difficult to find. In June, Pakistani officials expressed interest in signing a 30-year LNG supply contract to reduce exposure to volatile spot markets.<sup>55</sup> But oil-linked contracts are reportedly 75% more expensive than one year ago,<sup>56</sup> meaning that such a contract would risk locking-in high prices for three decades. Pakistan recently launched a tender for a six-year LNG contract, though it remains to be seen if this will attract affordable bids. India's largest LNG importer Petronet LNG recently delayed plans to sign a supply contract for 1 mtpa due to the surge in oil-linked contract prices.<sup>57</sup>

Pakistan's total LNG import bill is expected to hit US\$5 billion this year, up from US\$2.6 billion in FY2020. Meanwhile, price increases have nearly doubled the cashflow shortages in Pakistan's gas sector over the last three years.<sup>58</sup> Gas utilities have reportedly already disconnected gas-fired power plants due to non-payment

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<sup>48</sup> Many speculate that defaulted cargoes were rerouted to higher priced markets elsewhere, though neither company has confirmed speculation.

<sup>49</sup> Bloomberg. [India Scampers for LNG as Ex-Gazprom Unit Falts on Supplies](#). August 4, 2022.

<sup>50</sup> Reuters. [India's GAIL rationing gas as former Gazprom unit cuts supplies](#). August 2, 2022.

<sup>51</sup> The News International. [Pakistan secures 6 LNG spot cargoes for May-June](#). April 22, 2022.

<sup>52</sup> Reuters. [India's GAIL rationing gas as former Gazprom unit cuts supplies](#). August 2, 2022.

<sup>53</sup> Bloomberg. [Pakistan's \\$1 Billion Gas Tender Flop to Worsen Energy Crisis](#). July 7, 2022.

<sup>54</sup> Economic Times. [Surge in natural gas imports by Europe hits India's supplies](#). August 3, 2022.

<sup>55</sup> Bloomberg. [Pakistan Plans to Sign a Long-Term LNG Deal to Ease Gas Shortage](#). June 1, 2022.

<sup>56</sup> Bloomberg. [Long-Term Gas Deals Become Pricey as World Moves to Quit Russia](#). April 21, 2022.

<sup>57</sup> Reuters. [India's Petronet delays plan for 1mtp LNG deal amid high prices](#). August 5, 2022.

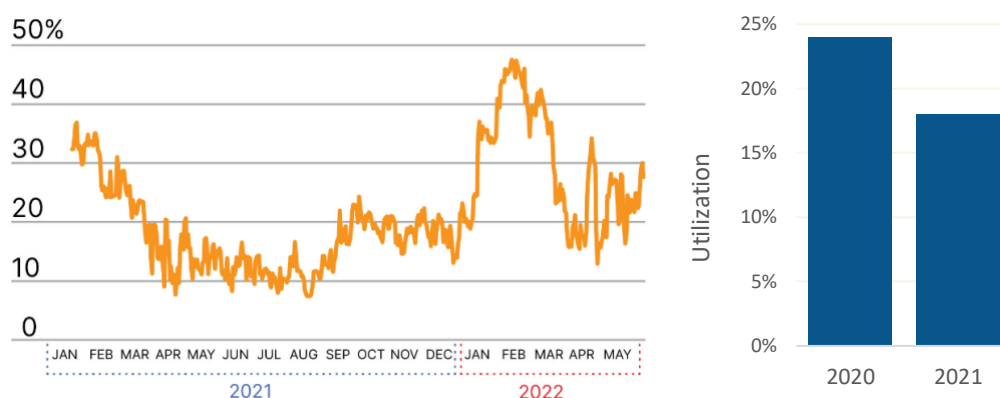
<sup>58</sup> Business Recorder. [Gas sector circular debt nearly doubled in 3 years](#). June 10, 2022.

issues and the build-up of debt.<sup>59</sup> While these connections may be renewed or legally challenged, such difficulties demonstrate how cashflow shortages and high LNG prices may impede the financial sustainability of long-term LNG imports in Pakistan.

In all three South Asian markets, high LNG prices and supply shortages have crimped gas demand from the power sector. In Bangladesh, for example, gas supply to power plants has fallen to 900 million cubic feet (mmcf) from 1,600 mmcf.<sup>60</sup> In late January and early February, between 40-50% of gas capacity was offline and stranded due to limitations on gas supply.<sup>61</sup>

In Pakistan, 6-7GW of the country's operational power capacity of 28GW has been offline due to fuel shortages, primarily at gas-fired plants.<sup>62</sup> And in India, LNG demand from the power and refining sectors has been particularly elastic, falling to their lowest levels since 2019.<sup>63</sup> Out of the country's ~25GW of available gas-fired generation capacity, 16GW had utilization rates of less than 20%. The average utilization of gas-fired power plants declined to just 18% in 2021, due to high LNG prices and non-availability of domestic gas.

**Figure 16: Bangladesh Stranded Gas Capacity Due to Fuel Shortages (Left); Average Gas Power Utilization in India (Right)**



Source: IEEFA, Bangladesh Power Development Board; IHS Markit.

India and Bangladesh are facing renewed calls to boost domestic gas production to avoid high global LNG prices. New gas developments in India in 2020 and 2021 boosted domestic gas production 17% y/y in 2021. Meanwhile, LNG imports declined by 6% y/y in 2021 due to increased domestic production and high spot LNG prices in the second half of the year.<sup>64</sup> An increase in domestic gas production is

<sup>59</sup> S&P Global. [Fuel shortages hit nearly a quarter of Pakistan's operational power plants](#). July 20, 2022.

<sup>60</sup> The Geopolitics. [Dealing with the Impact of Global Energy Crisis on Bangladesh](#). July 20, 2022.

<sup>61</sup> IEEFA. [Global LNG outlooks point to rough waters ahead for Bangladesh](#). June 9, 2022.

<sup>62</sup> S&P Global. [Fuel shortages hit nearly a quarter of Pakistan's operational power plants](#). July 20, 2022.

<sup>63</sup> S&P Global. [Asia Pacific Medium Term LNG Outlook](#). May 5, 2022.

<sup>64</sup> IHS Markit. [India LNG Market Report](#). July 2022.

widely expected to limit the growth of India's LNG demand.<sup>65</sup> Bangladesh has also faced renewed pressure to develop domestic gas reserves,<sup>66</sup> which are estimated to contain a potential 200 trillion cubic feet (Tcf) of gas.<sup>67</sup>

Wind and solar are also gaining traction in all three South Asian markets. Investment in renewable energy capacity in India surged to a record US\$14.5 billion in the 2021-22 fiscal year.<sup>68</sup> Total capacity additions reached 15.5GW, up 50% from the previous year. In 2022, renewables growth continued, with 3.3GW of renewables added to the grid compared to zero new thermal additions. In June 2022, the government announced a 4GW offshore wind tender, towards the goal of deploying 450GW of renewables capacity by 2030.<sup>69</sup>

Indian companies are also taking measures to reduce gas demand in non-power sectors through the expansion of green hydrogen. In June 2022, Indian renewable energy developer ACME signed a memorandum of understanding (MOU) with the state government of Karnataka to develop a US\$7 billion integrated solar to green hydrogen to green ammonia facility that will produce 1.2 mtpa of green hydrogen by 2027. Also in June, TotalEnergies announced a partnership with Adani Group subsidiary Adani New Industries Limited to invest US\$50 billion in 10 years to produce green hydrogen.<sup>70</sup>

In Pakistan, the government is set to announce a new solar policy that aims to deploy 7-10GW of additional residential and utility-scale solar capacity by next summer.<sup>71</sup> The aim of the policy is specifically to reduce dependence on imported coal and LNG, reduce energy costs, and improve energy security. The government reportedly aims to increase domestic energy self-sufficiency to 90% by 2030, up from 40% today.<sup>72</sup> The erosion of LNG as an affordable and reliable energy source are spurring policies that may permanently dent LNG demand growth in Pakistan and the broader South Asia region.

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<sup>65</sup> IHS Markit. India LNG Market Report. July 2022.

<sup>66</sup> The Daily Star. [Energy crisis: Govt strategy to blame, not war](#). July 25, 2022.

<sup>67</sup> World Bank. [In the Dark: How Much Do Power Sector Distortions Cost South Asia?](#), p. 82. 2019.

<sup>68</sup> IEEFA. [Record US\\$14.5 billion investment in Indian renewable energy sector in last financial year](#). June 9, 2022.

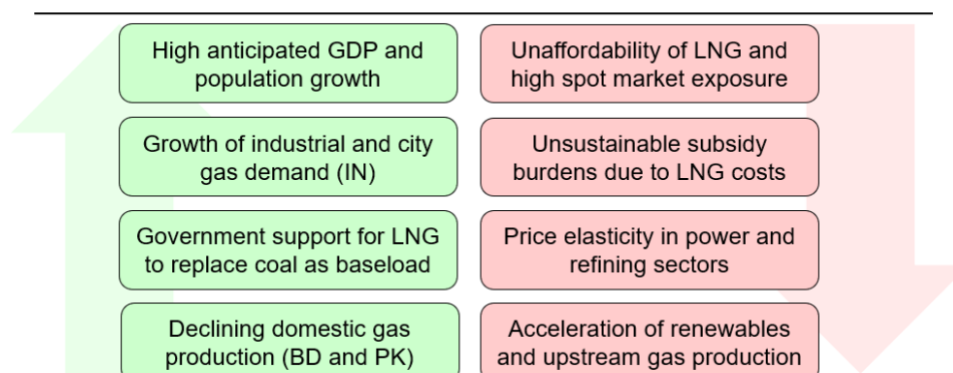
<sup>69</sup> BQ Prime. [India Announces Plan To Conduct Offshore Wind Auctions In 3-4 Months](#). June 9, 2022.

<sup>70</sup> IEEFA. [The race for new-generation clean energy technologies in India](#). July 11, 2022.

<sup>71</sup> Dawn. [Govt to explore solar options amid high energy costs, zero LNG](#). July 8, 2022.

<sup>72</sup> Profit Pakistan. [Govt all set to introduce policy on solar panels, equipment manufacturing](#). July 17, 2022.

### South Asia: Major LNG Demand Drivers



## Southeast Asia

Southeast Asia is also viewed by the LNG industry as one of the world's largest sources of long-term demand growth. Alongside LNG importing countries like Thailand, prospective markets like the Philippines and Vietnam have large proposed pipelines of LNG terminals and LNG-to-power projects. Both countries, however, have faced multi-year difficulties in getting new LNG projects built. An inability to secure LNG volumes at competitive prices is likely to delay projects further.

Thailand is the largest gas consumer in Southeast Asia. Faced with declining domestic gas production and reduced pipeline gas imports from Myanmar, Thailand has been forced to purchase expensive LNG from spot markets to maintain its gas-based economy.

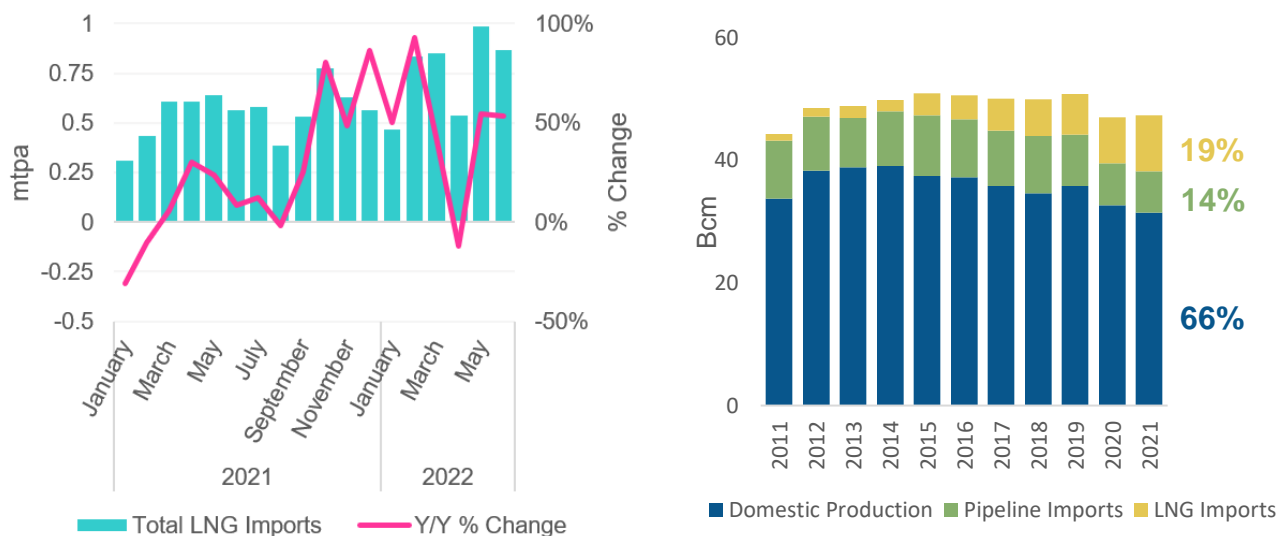
In 2022, LNG imports through June increased by 1.3 mtpa compared to 2021. As a result, the country faces a "perfect storm" of high imported fuel costs and limited access to cheaper domestic or piped supplies.<sup>73</sup> Gas prices to the power sector have more than doubled compared to April 2021.<sup>74</sup> The country purchased LNG cargoes for August delivery for over US\$40/MMBtu and will likely have to pay more for volumes in winter 2022. Power tariffs in Thailand have also reached their highest level ever, as expensive fuel import costs are passed to end-users.<sup>75</sup>

<sup>73</sup> Reuters. [Analysis: Thailand faces perfect storm as it seeks more LNG supply](#). March 15, 2022.

<sup>74</sup> IHS Markit. [Domestic gas prices in Thailand double as LNG imports rise](#). August 5, 2022.

<sup>75</sup> Bangkok Post. [Electricity bills to surge as power tariff hits all-time high](#). June 20, 2022.

**Figure 17: Thailand LNG Imports are Rising in 2022; Thailand Natural Gas Supply by Source**



Source: IHS Markit; BP Statistical Review of World Energy.

In June, however, Bloomberg reported that Thailand would cut LNG imports from the spot market due to unaffordable prices. And in July, spot purchases dropped 75% month-on-month, and 85% from a record volume of spot cargoes in May 2022. Instead, the country has turned to cheaper options, such as diesel and fuel oil, while postponing the planned shutdown of several coal-fired power plants.

The prospective LNG markets of Vietnam and the Philippines were anticipated to bring their first LNG import terminals online in 2022. Vietnam still aims to commission an LNG terminal at Thi Vai in the fourth quarter, with commercial operations in 2023. While some expect commissioning to be delayed into next year, high spot market prices mean the terminal could go underutilized even if it does enter service.<sup>76</sup>

Volatile prices are also complicating negotiations on power purchase agreements (PPAs) for new LNG projects, which are already fraught with uncertainty. In June, Vietnam's Prime Minister publicly expressed concerns about dependence on foreign imported LNG due to high prices.<sup>77</sup> High fuel prices have undermined the country's ability to finalize long-term power sector plans.

In the Philippines, a terminal project led by First Gen Corporation aimed to come online in the third quarter of 2022. In June, the company announced that the project would be pushed back until at least the third quarter of 2023 due to unspecified

<sup>76</sup> Energy Intelligence. [High LNG Prices Threaten Plans to Open New Markets](#). March 22, 2022.

<sup>77</sup> Dautu Online. [Chưa chốt xong Quy hoạch điện VIII \[Power planning VIII has not been finalized yet\]](#). June 18, 2022.

events and circumstances beyond its control.<sup>78</sup> LNG terminal projects have been repeatedly delayed in the Philippines since 2003.

Another front-running project in the Philippines, led by Singapore-based Atlantic Gulf & Pacific (AG&P), still aims to enter service this year.<sup>79</sup> However, it remains unclear how buyers in the Philippines intend to procure LNG given limited LNG supplies globally. According to the IEA, “neither Viet Nam nor the Philippines – the region’s two prospective new LNG importers – have signed any long-term contracts to date, and thus would have to compete with Europe and Northeast Asia for limited short-term LNG supplies in the years ahead.”<sup>80</sup>

AG&P representatives have said that the import terminal’s initial customer, San Miguel Corporation, has secured a short-term LNG supply contract and a medium-term contract from a portfolio player starting 2023.<sup>81</sup> However, no details about the LNG supplier or the terms of the contract have been revealed.

**It remains unclear how buyers in the Philippines intend to procure LNG given limited supplies globally.**

Given the current market tightness, new oil-linked contracts are likely to reflect elevated LNG prices. According to S&P Global, “Any Asian buyer looking for short-term contracts before 2024-2025 is in a precarious situation. Southeast Asian utilities said they had been offered one-year contracts at slopes of as much as 25% Dated Brent for the next couple of years, much higher than their pain threshold of around \$15/MMBtu.”<sup>82</sup> For perspective, oil-linked contracts were priced at roughly 10% of Brent crude prices between 2020 and 2021.<sup>83</sup>

Without a viable procurement strategy for competitively priced LNG in the Philippines or Vietnam, both countries will likely face a choice between paying exorbitant prices for LNG or going without LNG altogether. The latter option would force the countries’ new regasification terminals and LNG-fired power plants to go unused and stranded.

As LNG projects in the Philippines face delays and fuel procurement issues, renewable energy projects are moving forward. In June, the country held its first centralized renewable energy auction for 2GW of new supply. The auction was widely viewed as a success, with 19 contracts awarded to develop 1.97GW of new solar, wind, hydro, and biomass projects.<sup>84</sup> These projects are expected to come

<sup>78</sup> Reuters. [Philippines' First Gen seeks permit extension for delayed LNG terminal project](#). June 15, 2022.

<sup>79</sup> Manila Standard. [AG&P preparing to operate 1st LNG terminal this year](#). July 6, 2022.

<sup>80</sup> IEA. [Gas Outlook Q3 2022](#), p. 43. July 2022.

<sup>81</sup> Energy Voice. [AG&P to launch Philippines LNG terminal this year, eyes Asia expansion](#). August 4, 2022.

<sup>82</sup> S&P Global. [Global LNG contracting rush leaves Asian importers in tight spot](#). June 1, 2022.

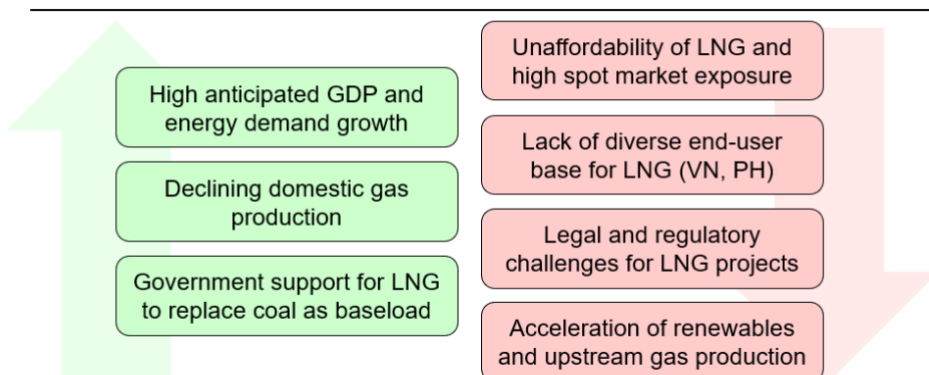
<sup>83</sup> Wood Mackenzie. [LNG contracting off to a fast start this year with more than 10 mmtpa signed](#). May 16, 2022.

<sup>84</sup> Philippines Department of Energy. [Notice of Award: List of Winning Bidders for the GEA-1](#). June 24, 2022.

online between 2023 and 2025, and the auction is set to be conducted on an annual basis.

As LNG projects are delayed and renewables projects accelerate, the new presidential administration has announced its intention to limit the country's dependence on imported fuels.<sup>85</sup> Energy departments officials have said the administration will promote domestic energy sources—including renewables, nuclear, hydrogen, and indigenous gas resources—to reduce energy costs and lower foreign import dependence.

### Southeast Asia: Major LNG Demand Drivers



## Northeast Asia

### Japan

Japan has historically been the world's largest LNG importer, having locked in long-term LNG purchase agreements linked to oil prices that leave the country less vulnerable to spiking LNG spot markets. Even so, the country's annual LNG purchases have declined from a peak in 2014 (see Figure 18 below).

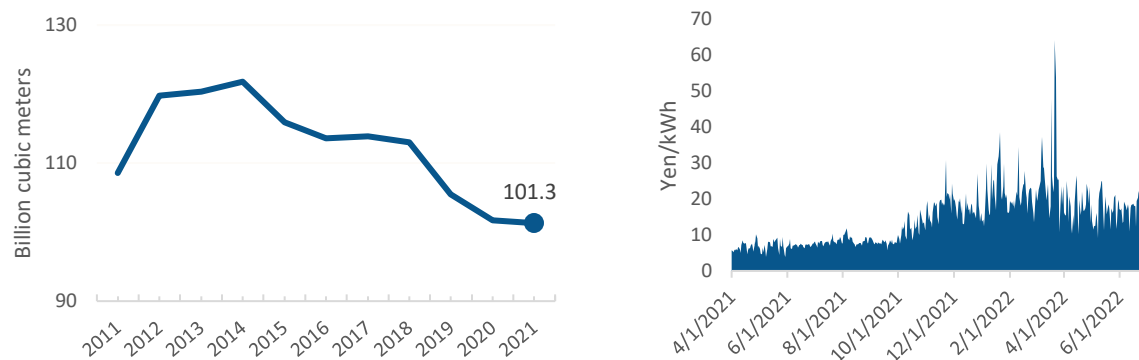
In the first six months of 2022, Japan's LNG imports are down 3% year-to-date, due largely to higher LNG costs and competition with European buyers. In July 2022, Japan purchased its most expensive LNG cargo ever at ~US\$40/MMBtu.<sup>86</sup> High imported fuel costs have resulted in elevated power prices (see Figure 18 below).

<sup>85</sup> ABS CBN News. [DOE eyes reducing energy cost, dependence on imported fuel](#). July 26, 2022.

<sup>86</sup> Bloomberg. [Japan Buys Most Expensive Gas Shipment as Energy Crunch Bites](#). July 19, 2022.



**Figure 18: Japan's Annual LNG Imports; Japan Spot Power Prices (Day Ahead 24 Hours)**



Source: *BP Statistical Review of World Energy 2022*; *Japan Electric Power Exchange*.

Meanwhile, the value of the yen has fallen to a 24-year low,<sup>87</sup> further raising US dollar-denominated LNG costs. Electricity demand also reached its highest level since 2011 due to a record-setting heat wave in June, causing the government to urge citizens to conserve electricity.<sup>88</sup> The country is on the brink of a severe energy crisis.<sup>89</sup>

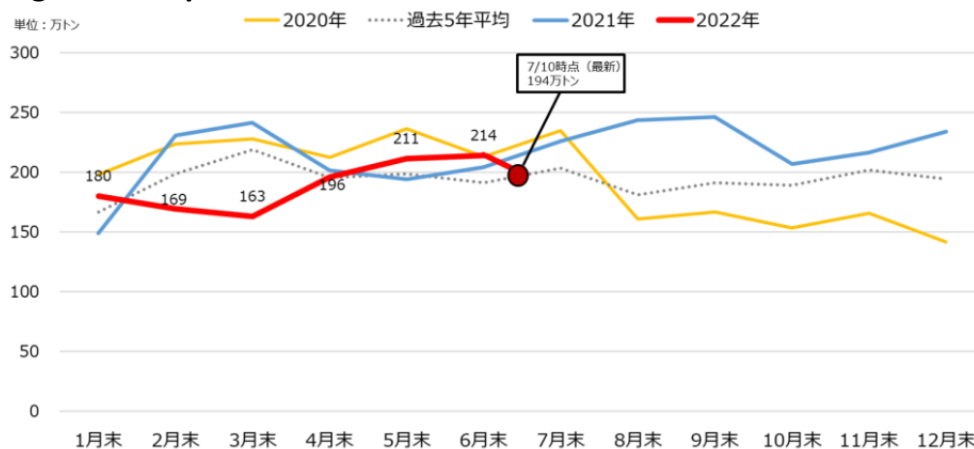
The Australian government estimates suggest the country's LNG imports could fall to ~70 million tons this year—a reduction of 4.3 million tons y/y—and hit 61 million tons by 2024.<sup>90</sup> In July, LNG storage levels for power generation were below 2021 and 2020 levels, though slightly above the 5-year average. Despite healthy storage levels, severe weather conditions could force Japanese utilities to return to the LNG spot market or reduce gas-fired generation altogether.

<sup>87</sup> Reuters. [Explainer: What are the consequences of yen's fall to a 24-year low?](#) June 13, 2022.

<sup>88</sup> CNN. [Japan tells millions to save electricity as record heat wave strains power supply.](#) June 28, 2022.

<sup>89</sup> Bloomberg. [Energy Crisis Slams Japan as Weak Yen Sends Import Costs Surging.](#) July 4, 2022.

<sup>90</sup> Australian Government, Department of Industry, Science and Resources. [Resources and Energy Quarterly.](#) June 2022.

**Figure 19: Japan LNG Inventories for Power Generation**

Source: METI Agency for Natural Resource and Energy. X-axis indicates month of the year, while Y-axis indicates storage volumes, with units displayed in 10,000 million tons. Dotted line indicates 5-year average.

Japan's LNG imports are widely expected to fall further through 2030. The country's 6<sup>th</sup> Strategic Energy Plan introduced in 2021 calls for a 17% reduction in LNG-fired power generation through 2030, from a share of 37% in the power mix in 2019. This is a more dramatic cut to LNG consumption than previous plans and could result in a reduction of LNG demand in Japan by 25 mtpa—one third of the country's current LNG demand—according to Bloomberg New Energy Finance estimates.<sup>91</sup>

To improve Japan's energy self-sufficiency,<sup>92</sup> the government is aiming to dramatically ramp up the share of renewables and nuclear in the power generation mix. The 6<sup>th</sup> Strategic Energy Plan, which took effect in April, seeks to increase the share of renewable energy from 18% of the power mix to 36-38%.<sup>93</sup> In May 2022, Japan set a new monthly record for solar power, which generated 10 terawatt-hours, or 15% of total electricity generation.<sup>94</sup>

Japan's energy crisis has also sparked a rethink of nuclear policy. Since all reactors were halted after the 2011 Fukushima Daichii meltdowns, ten have passed safety inspections and resumed operations. Of those, only five are currently online as others undergo safety updates.<sup>95</sup> Prime Minister Fumio Kishida has said as many as nine reactors will be online by winter,<sup>96</sup> potentially reducing LNG demand by 4 Bcm (3.1 mtpa).<sup>97</sup> And under the Strategic Energy Plan, the share of nuclear power

<sup>91</sup> The Fuse. [Japan's Decision To Cut LNG Demand Clouds Gas Outlook](#). July 28, 2021.

<sup>92</sup> Japan's energy efficiency ranks among the lowest of any OECD country. METI. [Japan's Energy 2018: 10 questions for understanding the current energy situation](#). 2018.

<sup>93</sup> This is a much more ambitious target than the previous plan, which aimed for just 22-24% renewables by 2030.

<sup>94</sup> Ember. [Japan and South Korea hit solar power records in May](#). July 26, 2022.

<sup>95</sup> Nikkei Asia. [Japan wants up to 9 nuclear reactors running this winter](#). July 14, 2022.

<sup>96</sup> Nikkei Asia. [Japan wants up to 9 nuclear reactors running this winter](#). July 14, 2022.

<sup>97</sup> Birol, Fatih. "Japanese PM Kishida's decision to restart 4 nuclear reactors, in addition to 5 announced already, is key for Japan's energy security & can help global gas market stability."

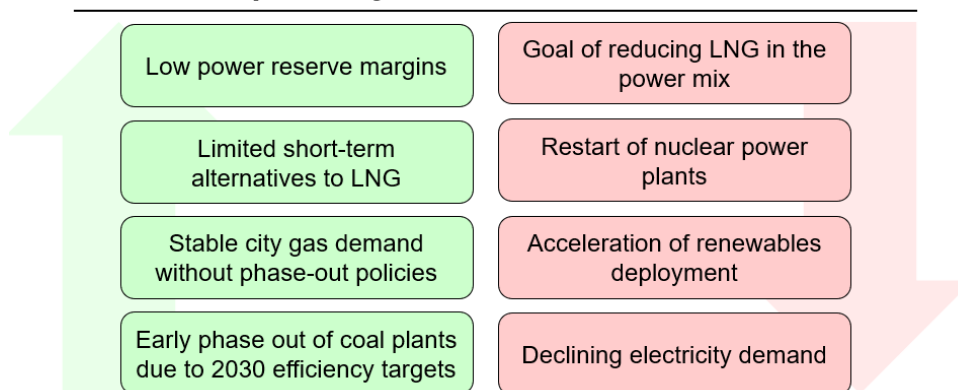
increases from 6% of the generation mix to 20-22%. While this target may be unlikely to be fully realized due largely to intense public and legal opposition, some polls suggests public sentiment is beginning to change.<sup>98</sup>

Japan's shift away from LNG will likely add pressure on utilities to change procurement strategies away from long-term purchase contracts toward shorter duration, smaller volume agreements.<sup>99</sup> Despite a flurry of new contracting activity in the global LNG market in 2022, no Japanese buyer has signed a new sales and purchase agreement this year.

At the same time, Japan has repeatedly requested additional LNG exports from the US and Australia.<sup>100</sup> Some Japanese companies are investing in US export projects and the government is exploring public finance options—including providing equity capital and loan guarantees—to support new and expanded US facilities.<sup>101</sup>

Given declining outlooks for domestic LNG demand, however, Japanese utilities invested in LNG export facilities may simultaneously have to ramp up investments in LNG import terminals in South and Southeast Asia to stimulate demand elsewhere.

### Japan: Major LNG Demand Drivers



These 9 reactors could free up over 4 bcm of LNG this winter, enough to fill at least 45 LNG tankers." [Twitter](#). July 15, 2022.

<sup>98</sup> Bloomberg. [Most Japanese Back Nuclear for First Time Since Fukushima](#). March 27, 2022.

<sup>99</sup> Bloomberg. [Global LNG Market Faces Shakeup From Japan's Green Shift](#). July 26, 2021.

<sup>100</sup> Reuters. [U.S., Australia understand Japan's LNG supply position -Japan minister](#). July 13, 2022.

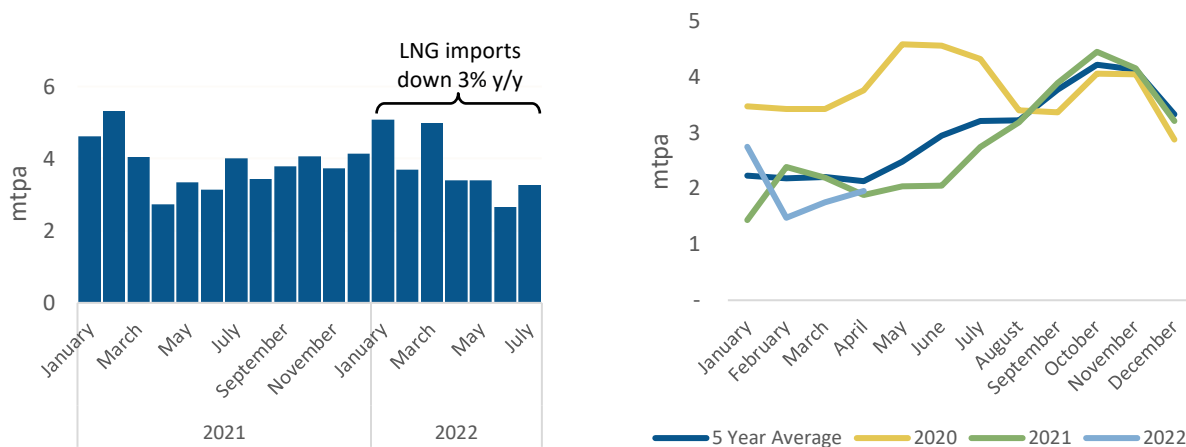
<sup>101</sup> Alaska Journal. [Japan eyes support for US LNG project expansions to shore up its energy needs](#). May 17, 2022.

### South Korea

Similar dynamics are unfolding in South Korea, where a push toward nuclear restarts is putting downward pressure on LNG demand over the medium term. South Korea’s annual imports have increased in recent years to 46.4 million tons in 2021, but in LNG imports through July 2022 decreased by 3% y/y (see Figure 20 below).

Due to high import prices, regulators have hiked retail gas prices three times already in 2022. These hikes have alleviated some financial pressure on state-run monopoly Korea Gas Corporation (KOGAS), allowing the company to pass higher fuel costs on to end-users.<sup>102</sup> South Korea’s natural gas inventories in 2022 have fallen below their five-year average, suggesting that a cold winter could force South Korea to increase expensive spot market purchases.

**Figure 20: South Korea Monthly LNG Imports (Left); South Korea LNG Inventories (Right)**



Source IHS Markit; Korea Energy Statistical Information System (KESIS) Monthly Energy Statistics (2022.07).

Clearing prices in the country’s wholesale power market have increased dramatically as well, reaching their highest point since 2010 (see Figure 21 below). However, the government has typically restrained retail price increases to quell inflationary pressures. As a result, state-run, vertically integrated utility Korea Electric Power Corp. (KEPCO) posted its highest ever operating loss of 7.7 trillion won (US\$6.1 billion) in the first quarter of 2022. This is larger than the company’s operating loss of 5.86 trillion won (US\$4.5 billion) for the entirety of 2021.<sup>103</sup>

<sup>102</sup> S&P Global. South Korea to raise domestic natural gas price again to reflect LNG import costs. June 28, 2022.

<sup>103</sup> Korea Herald. Surging Kepco losses. May 18, 2022.

**Figure 21: South Korea Monthly Electricity System Marginal Price (Jan 2010 - Apr 2022)**



Source: IHS Markit.

Despite recent increases in LNG imports, many forecasts expect South Korea's LNG demand to fall over the next several years. The state-funded think tank Korea Energy Economics Institute (KEEI), for example, anticipated a 1.1% decline in gas demand in 2022, even before the dramatic rise in global LNG prices in late 2021 and 2022. KEEI also expected a continued decline in gas demand of 1.5% and 0.4% y/y in 2023 and 2024, respectively.<sup>104</sup> More recently, the IEA forecasts a 4% decline in Korean gas demand in 2022—an absolute decline of 2.6 Bcm—and flat growth through 2025.<sup>105</sup> Other forecasts also suggest the country's gas demand will fall slightly through 2024.<sup>106</sup>

Downward demand expectations are due largely to an anticipated increase in the share of nuclear, coal, and renewables in power generation. The recently elected Yoon Suk-yeol administration has sought to reverse anti-nuclear policies under the previous government and now aims to increase the share of nuclear-fired power generation to 30-35% by 2030, up from 27.4% in 2021.<sup>107</sup> Undoing the previous administration's nuclear phase-out policy could effectively reduce LNG demand by 8 million tons, given that gas-fired power generators are used primarily for mid-merit and peaking generation.<sup>108</sup> In May 2022, solar power generated 7% of the country's total electricity generation, an all-time high for the month.<sup>109</sup>

According to the country's 9<sup>th</sup> Basic Plan for Electricity Demand and Supply, large coal and nuclear additions are planned through 2025. Many of the planned nuclear

<sup>104</sup> KEEI. Korea Mid-term Energy Demand Outlook (2020-2025). 2021.

<sup>105</sup> IEA. *Gas Market Report, Q3-2022*, p. 41. July 2022.

<sup>106</sup> Australian Government, Department of Industry, Science and Resources. *Resources and Energy Quarterly*. June 2022.

<sup>107</sup> IHS Markit. South Korea's presidential election: Nuclear takes center stage in the energy agenda. February 25, 2022.

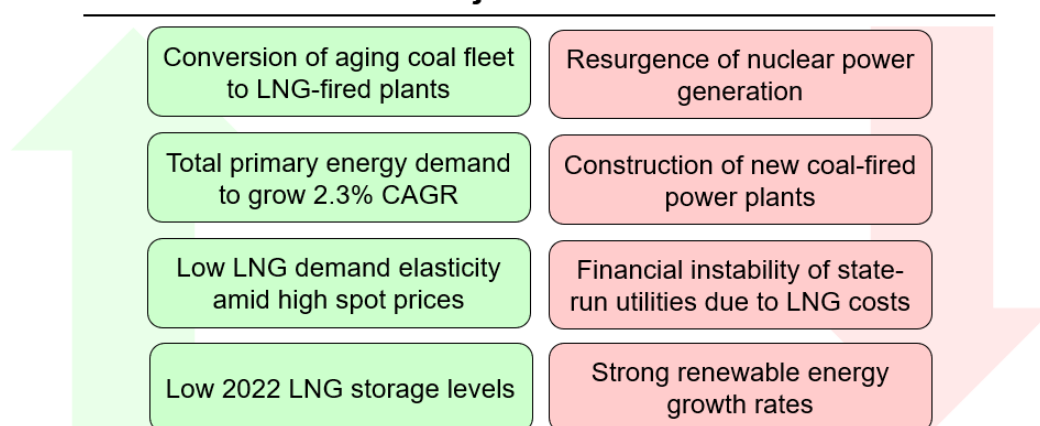
<sup>108</sup> IHS Markit. South Korea's presidential election: Nuclear takes center stage in the energy agenda. February 25, 2022.

<sup>109</sup> Ember. *Japan and South Korea hit solar power records in May*. July 26, 2022.

facilities are likely to face continued delays in the regulatory approval process, as well as public and legal opposition.

At the same time, many of the closing coal plants could be converted into LNG-fired power plants, potentially buoying South Korea's long-term LNG demand.<sup>110</sup> However, the new administration's reversal of previous energy priorities could negatively impact longer-term LNG demand growth. The new administration will be responsible for the 10<sup>th</sup> Basic Plan for Electricity Demand and Supply, due out in 2023.

### South Korea: Major LNG Demand Drivers



## Conclusion

Less than one year into higher LNG prices, there are already clear signs of a downward shift in the trajectory for LNG demand growth in Asia.

While many analysts expect Asian demand growth to simply recover to pre-crisis levels once prices settle and new supplies come online, countries are rapidly developing alternative energy sources that could permanently dent regional LNG demand growth. If high prices and volatility persist for the next several years and price-sensitive buyers in Asia are pushed further out of the market, moves to reduce LNG demand growth could accelerate.

In China, proposed gas import pipelines from Russia and Turkmenistan could permanently dent the need for more expensive LNG, while a ramp up of coal and renewables will undermine the economics of LNG-fired power generation.

South Asian buyers have already faced significant economic difficulties with LNG imports less than one year into a tighter, more expensive market. Rhetoric surrounding LNG as an affordable, reliable fuel has already shifted in Pakistan and Bangladesh, as both countries start to explore more sustainable domestic energy

<sup>110</sup> S&P Global. *S Korea to increase LNG-based power capacity by 43% to 59.1 GW in 2034*. December 29, 2020.

alternatives. An uptick in India's domestic gas production and ambitious renewables targets means that, according to the IEA, LNG demand may not surpass 2020 levels through 2025.

In Thailand, declining domestic gas production and reduced piped gas imports leave the country with few choices but to import LNG to fuel existing gas powerplants, yet LNG importers are acting to limit their exposure to spot markets. In prospective LNG markets like Vietnam and the Philippines, LNG import projects are facing delays, while the deployment of renewables is accelerating. Policymakers increasingly emphasize the need to reduce dependence on imported fuels.

As long as LNG volumes remain unaffordable and challenging to procure, US\$96.7 billion dollars of proposed LNG-related infrastructure projects in the highly price-sensitive markets of Pakistan, Bangladesh, Vietnam, and the Philippines will face a heightened risk of underutilization or cancellation.

In Northeast Asia, the current LNG market environment has accelerated pre-existing decarbonization plans, breathing new life into controversial discussions surrounding nuclear power. A renewed focus on energy self-sufficiency in Japan and the election of a pro-nuclear administration in South Korea could have permanent repercussions on LNG demand.

These shifts away from LNG are in their early stages. Should high prices and volatility persist for the next several years, the narrative around LNG as a viable, affordable transition fuel is likely to erode further. Shifts away from LNG toward alternative domestic energy sources are likely to accelerate, with negative implications for long-term LNG industry growth.

As Asian buyers start to rein in their exposure to volatile LNG markets, LNG liquefaction projects targeting completion after 2026 may enter the market with a smaller than anticipated demand pool. New supply projects may therefore be unable to capture today's exorbitant prices, leading to lower profit margins than investors might expect in the current market environment. Ultimately, high prices now may undermine profits and exacerbate stranded asset risks for LNG projects in the future.

## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

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Sam Reynolds, an energy finance analyst with IEEFA, focuses on the economic, financial, and climate risks associated with natural gas and liquefied natural gas (LNG) infrastructure developments in emerging Asia. He is the author of several studies concerning the region's transition to renewable energy, stranded asset risk in the natural gas sector, and the macroeconomic risks associated with a greater regional dependence on imported LNG.

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