



# Building Resiliency in the Indo-Pacific LNG Basin

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Russia's invasion of Ukraine has destabilized energy markets around the world: It has required a rethinking of energy policy for those nations dependent on imports not only within Europe but also globally. Indo-Pacific countries without indigenous sources of supply are looking outside the region for stable, trusted trading partners. These commercial alliances present an opportunity to forge and strengthen diplomatic ties as well. Countries will either capitalize on or cede this opportunity to others.

Governments and industry in the Indo-Pacific region should set the pursuit of energy security and resiliency as an explicit goal at the same level of importance as achieving their environmental aims. Doing so would mean establishing an analogous policy and investment agenda toward that end. It should first reduce the volatility of markets by creating a buffer in times of market disruption. Second, it should recognize that more supply is required to satisfy demand, especially for natural gas and liquified natural gas (LNG), and so move countries away from local coal, which is cheap and plentiful. Third, it should identify diverse supply sources for consumers in Asia, which will see the greatest demand growth per capita in energy in the coming decades.

The United States is uniquely positioned both to satisfy its industrial base, which is expected to grow as companies move manufacturing to North America to take advantage of its plentiful and inexpensive energy resources, and to export supplies of LNG to Europe and Asia. More supply from the United States would reduce the competition for cargoes between the two regions that we have seen since the outset of the Ukraine conflict and that has resulted in high price levels. Additional supply would also help reduce pricing volatility. Both these results would build confidence in the region that natural gas investments could be complementary to new fuels, such as hydrogen, or new forms of energy, such as renewables, whose technologies are currently either too immature to bring them to scale or to provide an uninterrupted supply.

Natural gas has become a strategic commodity. Cooperation between producers and consumers can provide the stability and affordability in natural gas markets that are required to move

away from cheap coal. These commercial arrangements are an essential asset in building broader trust between allies and can readily be implemented by the United States.<sup>1</sup>

## HIGH STAKES IN THE INDO-PACIFIC

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Unrest around the globe has upended energy markets and sent policymakers looking for ports in the storm. This has refocused minds on surety of supply, especially for the most vulnerable nations. And those countries are seeking reliable, trusted partners to enable them to navigate these choppy waters.

The invasion of Ukraine has reminded us again that securing reliable supplies of energy—especially natural gas—is a strategic imperative. This has been felt most acutely by countries in Europe, as they have looked for alternative sources to displace piped natural gas from Russia.

The even more import-dependent and economically dynamic Indo-Pacific nations also must grapple with energy needs in an environment of uncertainty. Liquefied natural gas is critical to Korea, Japan, and Taiwan, and any threat to its availability represents an existential threat to their economies and national security. But just as important are India, Indonesia, Pakistan, Bangladesh, the Philippines, and Vietnam, which have a combined population of 2.5 billion people. Developed and developing Indo-Pacific countries will experience some of the world's greatest economic growth, demographic growth, and advancements in living standards, and all need to be fueled by energy.

Each of the countries in the Indo-Pacific is making efforts through commercial channels to strengthen their economies and their security. In doing so, they need to weigh risk. What is the correct balance that provides them diversity of supply sources and energy fuel types? How do they respond to geopolitical issues that affect supply and delivery? What is their exposure to pricing indices? And how should environmental considerations factor into their decision making? At the same time, planners cannot ignore the possibility of fragmentation of the world's economies along political lines. Although free traders may dismiss this threat out of hand, it appears increasingly likely, as countries erect barriers to markets. Japan, for example, has historically demonstrated its ability to set strategic energy-industrial policy. After the oil crises of the 1970s, Japan, which then relied on crude imports for more than 77 percent of its energy needs, felt that its industrial output had been impeded more so than that of its Western competitors.<sup>2</sup> It responded in several ways: waging a campaign of fuel diversification through the development of maritime LNG technology for natural gas importation and nuclear power development; becoming a world leader in the energy efficiency of its building, industrial, and transportation sectors; setting a policy goal to increase its self-development ratio of oil from its previous level of 10 percent (that is, oil produced abroad by Japanese firms or with upstream Japanese equity stakes);<sup>3</sup> and becoming an active member, in cooperation with countries in the West, in the OECD's International Energy Agency (IEA) energy buyers' coordinating body, including the development of multimonth emergency oil stocks as required by it.

From the late 1970s through the early 1990s, Japan successfully established a variety of supply nodes in the LNG sector in Alaska, Brunei, Malaysia, Indonesia, and Australia. It invested in the development of upstream extraction and gas export projects, often taking an equity stake in them, to enable long-term supply contracts. That model proved highly successful for the country.

As Japan currently reviews its Seventh Strategic Energy Plan and looks ahead to identify new supply nodes amid a new period of global energy market uncertainty,<sup>4</sup> it once again perceives a need to lock up long-term supplies and is reconsidering these historic arrangements. New tranches of supply are most likely to originate in North America and the Middle East, and Japan will be expected to position itself to preserve optionality. Japanese buyers are expected to seek long-term contracts with trustworthy partners after seeing other countries enter into agreements with suppliers that failed to deliver expected gas volumes when prices climbed.

Meanwhile, developing countries in Southeast Asia are also facing these same concerns, but affordability remains a key obstacle and a primary driver of many of these economies.<sup>5</sup> Cost will always matter, but the availability of plentiful, cheap coal is always a credible fallback option and limits these countries' willingness to take financial or security risks on the adoption of cleaner fuels compared to developed-country buyers.

Today, the war in Ukraine, widening conflicts in the Middle East, including disruptions in the Red Sea, and the global energy market chaos that has ensued should be viewed as a watershed moment for the Indo-Pacific's LNG policy strategy, just as was the case for oil after the 1970s Arab embargoes. With it comes new opportunities to build regional resilience.

## **GAS IN CHAOS**

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The world is a more dangerous place than we thought. When the Hoover Energy Policy Working Group convened for a series of discussions early in 2022, just after the Russian invasion of Ukraine, we structured our concerns into short-term supply security needs and their context within continuing longer-term climate goals. A key takeaway was that natural gas had become the long tentpole, with a renewed global importance given its ability to balance issues of climate, security, and price. As we have seen since, natural gas from Russia was weaponized to break the will of the European people for their support of Ukraine. But European countries have been steadfast: Piped gas volumes from Russia dropped 84 percent in 2023. LNG has filled some of the gap, with volumes diverted from Asia—historically premium buyers—to Europe. But this has come at a cost. Europe spent \$190 billion on LNG imports in 2022, three times the amount of prior years.<sup>6</sup> That increased energy cost precipitated a deindustrialization of the continent, as economic output in the industrial sector declined.<sup>7</sup>

Europe's competitiveness, built on the back of cheap Russian pipeline gas, is now in question. A July 2022 survey of German industry, before the full Nordstream shutdown, found that 32 percent of energy-intensive firms were considering shifting their production abroad.<sup>8</sup> This has now come to pass: The German chemical manufacturer BASF has closed production

lines at its main Ludwigshafen facility and announced plans to shut down plants in Knapsack and Frankfurt by the end of the year.<sup>9</sup> Its production will move to the United States, Asia, and Belgium. European industrial output, including steel manufacturing, aluminum smelting, fertilizer production, and glassmaking, has been significantly scaled back.<sup>10</sup> In March 2023, 50 percent of cement, petrochemicals, and glass manufacturing in Europe was offline.<sup>11</sup>

The United States has been the serendipitous beneficiary of Europe's decimated gas-fueled industry. Chemical producer OCI announced an expansion of an ammonia plant in Texas.<sup>12</sup> Steelmaker Arcelor Mittal scaled back production at two steel plants in Europe while expanding its new Texas facility, given better-than-expected financial results there, in part because of low US energy input costs.<sup>13</sup> Most Americans do not appreciate the level of petrochemical industry (e.g., polymers and plastics) investment that has taken place in the United States as a result of low-cost shale gas inputs—more than \$200 billion in infrastructure, according to the American Chemistry Council.<sup>14</sup> That investment is now poised to grow even higher. What will be the political response of ally and partner voters in Europe, when they are asked to do more in support of the Ukrainian war effort while the United States and other lower energy-cost countries appear to benefit from their austerity?

In Asia, after an early focus on who seemed to be aligning with whom in the conflict, we now see a clearer picture of the fallout. With LNG prices climbing to \$70 per million British thermal units (MMBtu) in August 2022, imports fell in the most price-sensitive markets in South and Southeast Asia. As prices stabilized in 2023, demand recovered, but price volatility has continued in a tight market. Meanwhile, Southeast Asia will likely need to build new LNG import infrastructure just to compensate for declining domestic natural gas production, such as in the Philippines.<sup>15</sup> Given these continued pressures, anyone surprised by the lack of new climate commitments at the 2023 COP 28 meetings in Dubai had not paid attention to the centrality of gas in developing economy decarbonization plans.

With the world set to be short on gas until the end of the decade, Asian buyers are in for a long slog. In Japan, state-owned JOGMEC in the fall of 2022 changed its name from the Japan Oil, Gas, and Metals National Corporation to the Japan Organization for Metals and Energy Security, and it was given new authority to import LNG on behalf of Japan's private utilities.<sup>16</sup> In Taiwan, the government had attempted to keep the price of delivered energy artificially low, despite rising import costs: Doing so resulted in \$12 billion in losses in 2023 for the state electricity generator Taipower, as well as losses from the monopoly importer CPC. In March 2024, the Taiwanese government announced a capital injection of \$3.12 billion in Taipower, which was eventually forced to raise electricity prices by an average of 11 percent, including a 25 percent increase for large industrial customers—price increases that still lagged those elsewhere in northeast Asia.<sup>17</sup> In Korea, the Yoon administration, facing \$30 per MMBtu LNG spot prices, did a 180-degree turn on the previous administration's nuclear power pause policy and now looks to redouble its use of that energy source.<sup>18</sup>

Consider as well how the gas market disruptions of 2022 would have looked like had China's economic growth not been halted by its continued zero-COVID policies. (Even in China,

normally the world's second-largest buyer of LNG, Xi Jinping ordered a halt to resales of contracted LNG imports to European buyers in 2022 in favor of proactively filling the country's fledgling underground gas reserves before winter). China imported 4.85 million metric tons of US LNG in 2023—arguably a positive line of trade for the United States to continue, even in full appreciation of the significant tension between the two countries.<sup>19</sup> China became the world's largest importer of LNG that same year, at 71.32 million metric tons.<sup>20</sup>

Despite these regional anxieties, the US voice on this issue diplomatically in Asia has been largely silent. Gas is seemingly off the US-Asian economic agenda, with continued US pressure to restrict investment in gas infrastructure overseas; this pressure is being exerted, both publicly and behind the scenes, by US public lending organizations and multilateral development banks in which the United States holds equity. This is despite overt requests from close partners in the region explicitly requesting US collaboration on global gas market concerns. As the chairman of the Institute for Energy Economics in Japan wrote in a message at the time of the meeting of the Quad countries in Tokyo in May 2022, "The restriction of financing for gas & LNG infrastructure in Asia could push those countries toward China which will be happy to provide the financing and technology."<sup>21</sup>

## PLANNING FOR THE NEXT ASIAN GAS CRISIS

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Given the time it takes to develop new infrastructure, little can be done to address price impacts and LNG shortages in the near term in the Indo-Pacific. But what efforts can be started today to help mitigate the impacts of future LNG disruption in the Pacific Basin?

The energy resources, technologies, and financial markets of United States can make it a global leader in balancing energy affordability, security, and environmental considerations. Its ample natural gas supplies can bolster both partner energy security and energy transitions, and it should play a central role in collaborations that will facilitate the expansion of that fuel and the rollout of associated infrastructure that will create greater resilience in the region. A vacuum in this leadership will be filled by others who will offer both a compelling argument and the willingness to fund it.

We offer six recommendations for a regional gas resiliency agenda.

### 1. GROW THE US AND GLOBAL GAS SUPPLY

After the Ukraine invasion, European and Asian countries scrambled to find additional cargoes to replace piped gas volumes from Russia. Few spot cargoes, however, were available on an already constrained market. For example, one major Western producer that was approached by the Japanese in 2022 had no available cargoes from its portfolio until after 2030. Buyers in Asia are now focused on diversifying their supply. In addition to the United States, they are considering the Middle East (Qatar and the UAE), Australia, and, to a lesser extent, Papua New Guinea and the east coast of Africa to fill the gap.

In the United States, future limits to the gas resource base that was unlocked by the advent of hydraulic fracturing and horizontal drilling are as much a policy and regulatory matter as they are geologic. Of the ten large hydrocarbon basins in the United States, seven have already plateaued, and their output is now declining. But when a reservoir is said to be “depleted” in the United States, typically more than 70 percent of the gas remains in the ground. Much more can be recovered from those fields through new innovations in geophysics that complement the exceptional performance of oil field operations in recent years; through improving the efficiency of and sourcing for carbon dioxide over-injection that could produce more oil at lifecycle carbon dioxide emissions reductions of 50–100 percent in places such as the Permian Basin; and through broader experimentation by private industry incentivized by new tax credits (e.g., 45Q) or simply economic returns. The construction of enabling infrastructure, such as pipelines, storage, and gas-processing systems, is also required.

Producers in the US Appalachian’s Marcellus Shale, for example, estimate that their resource, together with the Permian Basin in New Mexico and West Texas, can contribute a potential 50 billion cubic feet per day increase in gas output over thirty years at a price of \$3.75 per MMBtu (regional producer, personal communication, October 2022). That alone would boost US natural gas output growth by approximately 50 percent over current levels: This increase would be the energy equivalent of the totality of Saudi Arabia’s current energy exports.

Private risk-taking and innovation will continue to expand the US resource base as long as confidence in the investment environment and related public support are present. To quote one independent producer in the US Permian Basin, “Lots of oil and gas came out over the years with shale, but not a lot of money. The hard policy environment is part of that.” Achieving this level of US production and making it available for export would require a predictable federal and local permitting environment for gas pipelines and LNG infrastructure that recognizes the global energy security and diplomatic value of the United States becoming a central global gas supplier. A menu of policy and regulatory reforms to that end could include steps by the Department of the Interior to encourage leasing on federal lands both on- and offshore, Federal Energy Regulatory Commission (FERC) nominations that are cognizant of the geopolitical implications of pipeline and LNG export terminal applications, National Environmental Policy Act permitting reforms, the scaling back of Department of Energy (DOE) discretionary reviews of LNG exports to non-free trade agreement (FTA) countries, and the scrapping of new SEC mandatory emissions disclosures that add to compliance costs.

Notably, the US gas resource potential competes for private investment with other producers globally. Despite US production growth, the mass of economically accessible oil and gas source rock is mostly in the Middle East and in Russia. And although the citizenry in the United States or Western Europe may have an aversion to the production of oil and gas, there is little such compunction elsewhere. Even just the possibility of federal or state limits on oil and gas production or consumption in the United States—or proximal regulatory barriers on supporting investments such as roads, water access, or pipelines—can act as a less visible “second face” deterrent to domestic investment.

The situation in our regional treaty ally Australia is a cautionary tale. There, climate change-driven environmental policies and regulation have increased energy security risk with trading partners. For example, the CEO of INPEX, a large Japanese energy company, has said that “Australia’s ‘quiet quitting’ of its LNG export juggernaut is making the world less safe both on climate and for the rules-based geopolitical order.” He warned that a deteriorating investment climate in Australia risked causing unintended consequences, predicting that the “increasing energy demand in our region will be met by coal and not by natural gas. The result will be much higher global greenhouse gas emissions and will make net zero by 2050 an impossible task.”<sup>22</sup>

In contrast, Qatar is dramatically expanding its LNG production and export capacity. It is executing an ambitious plan to increase its LNG output from 77 million metric tons per year (mtpa) to 142 mtpa by 2030 through its North Field expansion project.<sup>23</sup> This strategic growth targets both traditional Asian buyers—Japan, South Korea, and Taiwan, which collectively import about 60 percent of Qatar’s LNG production—and emerging markets like India and China. Qatari LNG exports today are competitive with those from the United States and other global producers—an advantage that stems from its low production costs (approximately \$0.30 per MMBtu compared to \$3–5 per MMBtu globally) and its location at the heart of the Persian Gulf, enabling cheap shipping to both Asian and European markets.<sup>24</sup> Doha balances its portfolio across both Eastern and Western buyers, and recent major deals include long-term contracts with China’s Sinopec and various European utilities.

Africa, meanwhile, has the potential to increase both its own consumption of gas for economic development and its global share of LNG exports through new production. A supportive US voice that endorsed, rather than restrained, the development of new natural gas infrastructure in Africa and elsewhere in regions with strong natural resource endowments but undeveloped domestic gas infrastructure would be positive for the global market. The late president of Namibia, Hage Geingob said, “African countries have been working to ensure that our countries have access to energy to industrialize, to grow our economies and become dealers of hope for the largest demographic on the continent—our youth.”<sup>25</sup> However, the United States and Europe have discouraged fossil fuel investment by multilateral development banks or even private lenders—which has entangled natural gas alongside coal and hamstrung resource development; this move is viewed as hypocritical given the West’s own energy systems. In Africa, for example, although gas export projects in Senegal and Mozambique will go ahead with private financing because they are more lucrative,<sup>26</sup> the lack of development bank capital means that local economies do not similarly benefit from that resource’s development; for example, through local power generation or gas-fed industrial projects. Although such local gas-to-power or industrial projects would essentially be demand-side rather than upstream gas supply investments, opting out of them weakens broader social buy-in and the longer-term political economy of a country’s overall gas ecosystem, ultimately capping the potential of development of the local resource.

## **2. RESOLVE LNG-SPECIFIC MARKET UNCERTAINTIES**

With more gas on the market, exporting LNG is perhaps the best opportunity for the United States to create an energy corridor with its allies in the Indo-Pacific. It is easily



transportable over long distances, is plentiful, and US gas can be competitive with gas from other sources. The customer is asking for it—and, in developed Asia, specifically—willing to enter into long-term contracts. Yet a variety of LNG-specific market uncertainties have created unnecessary risk and are limiting its future potential.

### ***US LNG Export Policy and Infrastructure***

In the United States, the Biden administration announced in January 2024 a “pause” on approvals for non-FTA export authorizations, a move that affects projects that have not already received DOE export approvals. (All LNG export projects must receive infrastructure siting approval from the independent FERC; exports intended for non-FTA country buyers must additionally receive a DOE approval that the export itself would be in the public interest.) This represents potentially 88.9 mtpa, the equivalent of 25 percent of US export growth and 10 percent of export capacity globally.<sup>27</sup> Even though the pause is likely to be overturned by the next administration, its lasting effect will be the message that it sends to allies about the long-term reliability of the United States as an energy supplier. The Biden administration has stated that there is sufficient natural gas to supply the market at present, but this does not consider projected future growth in demand, for example as driven by the increased power needs of technology and AI data centers.<sup>28</sup>

Considering only US domestic interests, a report released in October 2024 by the US National Association of Manufacturers (NAM) and PwC, for example, suggested that the LNG pause could stifle \$123–215 billion in contributions to the US GDP by 2044.<sup>29</sup> Notably, NAM CEO Jay Timmons—whose constituents include large US domestic gas consumers whose economic interests are occasionally invoked as reasons to limit US energy exports—commented, “With an all-of-the-above energy strategy, we don’t have to choose between national security, economic growth, and environmental protection—they go hand in hand. . . . Clamping down on LNG exports jeopardizes jobs and economic growth. It also forces other nations to rely on dirtier alternatives from adversarial nations like Russia, which exacerbates national security risks.” A December 2024 study by S&P Global on the impacts of restricting LNG exports to non-FTA countries similarly estimated \$250 billion in US GDP losses through 2040 and predicted that there would be only negligible (less than 1 percent) reductions in US domestic gas prices from limiting exports.<sup>30</sup>

The message of the LNG export “pause” is that the United States is becoming unpredictable, and this presents sovereign risk to Asian buyers. It is unlikely that commercial investors would put additional capital at risk in an uncertain policy environment. And politically, it is reasonable for them to similarly question whether US government or US government-supported multilateral finance would be available as a backstop. This uncertainty undermines Asia’s ability to do business with US producers—even though these Asian buyers fully understand that the United States will become the preeminent player in global LNG.

Asian buyers are concerned not just about policy risk but also the availability of US and North American export infrastructure. The West Coast of North America offers shorter transit times across the Pacific than from today’s export terminals on the Gulf Coast. Additional export



capacity on the West Coast would reduce geographic risk while continuing to take advantage of low-cost natural gas coming from the Permian Basin in Texas and New Mexico. Local opposition, however, has blocked export terminal proposals in California and Oregon. One good option for the United States is therefore to evacuate its gas through Mexico; Asian buyers see this as a proxy for West Coast capacity. An alternate route would move Canadian gas from British Columbia to Japanese and Korean buyers, which are equity holders in these projects.<sup>31</sup> And although more terminals on the US Gulf Coast could helpfully provide additional molecules to the market, buyers in the Indo-Pacific are concerned not just about the added costs of a longer transit but also about long-term navigability and security of the Panama Canal and how LNG tankers are queued in the priority list. Even though the drought has ended in Panama, weather events could still disrupt flows; agreements to reprioritize LNG shipments would benefit the Asian market and ease its concerns.

### **LNG Pricing**

Another unresolved source of LNG market uncertainty in the Indo-Pacific is pricing. Most new supply opportunities that could be available to support the Indo-Pacific gas market in the mid-term are likely to come from outside the region.<sup>32</sup> But the LNG industry conventionally runs on seven-to-ten-year investment megacycles, and producers need long-term commitments to underwrite new projects, many of which are new upstream development projects, coupled with dedicated offtake infrastructure. Because that means that project output is generally committed to a particular buyer, it becomes difficult to add extra spot LNG on the market (which can help fill gaps in disruptions) if demand patterns change, as they did in 2022.

Sales and purchase agreements for LNG are underpinned by a variety of pricing mechanisms. In many cases these “take or pay” contracts are oil-linked, with reopeners at set periods. This type of contract provides certainty on pricing to the buyer and the seller. The LNG industry was established with long-term (i.e., twenty- and thirty-year) contracts that both reduced investment risk for the producer and proved effective in securing the billions of dollars of project costs needed to build out the LNG value chain.

Since the industry’s inception, there has been a move toward shorter tenor contracts or even away from them entirely to buy on the spot market. But the recent volatility of natural gas prices is problematic for several reasons. OECD countries in Asia have traditionally been willing to enter into longer-term contracts. Those that have not, however, have been exposed to swings in price that have strained national budgets; the spot market has provided flexibility but has priced many non-OECD countries without long-term contracts out of the market. The generally accepted view in the Indo-Pacific is that natural gas becomes economically feasible below \$10 per MMBtu. But without market stability, these buyers will view natural gas as unreliable, which will slow the move away from coal.

With oil and gas pricing becoming increasingly disconnected, buyers and sellers have been looking for a common benchmark—and the trend has been toward pricing based on natural gas. A regional or global gas trading hub would establish a benchmark price that would offer predictability. Japan, for example, is now exploring an opportunity to supply other LNG buyers

in the region by establishing itself as a trading hub. As countries switch from coal to natural gas, Japan's JERA—already the world's largest LNG buyer—is looking at demand for Asia as a whole, not just Japan, including, for example, the potential for Japan to re-export LNG while arbitraging against different fuels.<sup>33</sup> Before the 2024 US LNG export “pause,” markets were moving toward a single index—the Henry Hub—in Louisiana. The advantage for the United States would have been the ability to trade through its own hub, backed by large domestic volumes. We should revisit the possibility of creating a common regional gas trading hub, whether located in the United States or elsewhere, to help address market volatility.

### **Russian Gas**

Before the recent actions of European buyers and the imposition of international sanctions significantly reduced the share of Russian gas on the European market, Russia's pipeline gas to Europe was very financially attractive to buyers. The large geologic resource, established gas infrastructure, and relatively short land transportation distances resulted in \$3–5 per MMBtu gas prices. Since the invasion of Ukraine, other actors have filled some of that gap—most notably, the United States, which in 2023 sent nearly two-thirds of its LNG exports to Europe, and Qatar. But current European LNG imports from the United States cost roughly \$10–12 per MMBtu, three times higher than the Russian precedent.

The Nordstream II pipeline from Russia to Germany was canceled by the German side (though it physically remains essentially complete), and the Nordstream I pipeline is nonoperational due to both Russian operational choices and undersea sabotage. But the physical existence of these pipelines, still connected to vast and cheap Russia gas resources, is problematic. Potential investors in new gas supply projects around the world—in the United States Appalachian, in Mozambique, or elsewhere—must ask themselves whether Europe will change its mind and once again buy large volumes of pipeline gas from Russia. That would be a financial risk for LNG projects particularly, which are generally higher priced than pipeline alternatives. This risk looms above capital for new global gas projects that is now sitting on the sidelines.

European buyers could signal their long-term intentions to decouple from Russian energy by supporting Western LNG investment, thereby giving stability to the broader LNG market. Moreover, investment in non-Russian LNG would offset Russian LNG volumes that are increasingly flowing to Asia and Europe. (Europe currently imports 16 percent of its LNG from Russia, principally from the Arctic LNG project in the Yamal Nenets region.)<sup>34</sup> Notably, Russia is already anticipating an increase in demand for its LNG, independently of what happens with its pipelines to Europe. Older ships are being reflagged under ambiguous ownership, adding to a shadow fleet that is delivering cargoes from the Arctic 2 expansion, which is currently sanctioned by Western authorities. Purchases of additional ships could also bring volumes from the Yamal LNG project, whether sanctions are imposed there or not.<sup>35</sup>

European investment in non-Russian LNG projects would also help build solidarity with gas buyers in Asia, including those that have traditionally purchased Russian LNG. Since the Ukrainian war, Asian buyers' fear of secondary sanctions has constrained the region's gas

trade with Russia, and many would wish to further reduce that trade if there were good alternatives. But those import-dependent countries also must weigh the concern of secondary sanctions against supply shortages that only coal can alleviate. Meanwhile European imports of Russian LNG continue to grow—an example of political hypocrisy that Asian governments will not ignore and should be reversed.

In sum, without a major Western political drive to promote gas and investment in gas as an alternative to Russian gas export infrastructure, it is hard to see Asia and Europe avoiding a major energy crisis, which would generate political pressure to unlock Russian—or even Iranian—gas stores.

### **3. ESTABLISH A JOINT REGIONAL GAS RESERVE, DATA, AND COORDINATED DRAWDOWN MECHANISM**

Today, 80 percent of global LNG demand comes from Asia, but Asia as a region has less than 40 percent of global production. As major buyers of gas, particularly LNG, countries of the Indo-Pacific should look to increase flexibility along the natural gas value chain through the establishment of joint reserve systems. Regionally coordinated gas purchases, information sharing, inventory management, and drawdown mechanisms in the event of a crisis would enhance energy security for like-minded Indo-Pacific countries.

There is a collective security aspect to gas storage (and supplier diversity) because a disruption in one country or subregion that would cause it to turn to a tight spot market can affect pricing and availability throughout the basin. But major gas consumers in the Indo-Pacific today have very different gas supply, demand, and storage profiles. Of the “J-K-T” traditional importers, effective islands who have almost no indigenous fossil fuel resources and rely entirely on LNG (rather than pipelines) for their gas needs, Taiwan’s gas storage situation is perhaps the most fragile: Their lack of winter seasonal demand peak for heating has allowed them to maintain an average gas storage of only about 11 days’ demand—all tanked—compared to roughly 40 days for otherwise similarly import-dependent Japan and Korea.<sup>36</sup>

Dynamics are different for newer “elective” LNG buyers such as India or China, which have other indigenous energy resources. These more diversified market participants, however, are quite important in the regional LNG system. Consider, for example, the broader market impact if China’s pipeline imports were to be directly disrupted, leading domestic consumers to turn to LNG to fill a large gap.

Compared to oil, gas is harder (and five to ten times more costly) to store, supply chains require more physical infrastructure, each piece of the chain takes a longer time frame to develop, and there is less spare capacity in the system. Developing a significant regional stockpiling capability for gas would be expensive, so consideration should be given for how to creatively build slack and flexibility across the supply chain. The International Energy Agency (IEA), recognizing the importance of this flexibility, noted that “underground gas storage and LNG storage can significantly mitigate price volatility. In regions where geographical

constraints make gas storage difficult, policy measures and flexible contracts can serve as effective substitutes.”<sup>37</sup>

In late 2024 the IEA began a Japanese government-funded two-year study to examine gas supply chains. It will examine voluntary gas reservation mechanisms, long-term gas planning, and the technology requirements for reducing emissions from LNG.<sup>38</sup> Along similar lines, several creative steps, as outlined later, could be taken to increase market flexibility across the value chain. These should effectively address national concerns, but a regional construct should be considered to build resilience.

### **Stockpiling**

Market disruptions after the Ukraine invasion have had the positive effect of making the fragility of the regional gas storage issue more salient to policymakers in the Indo-Pacific. Taiwan, for example, has established a policy of increasing its current, very meager gas storage capacity requirements from 16 days in 2022 to 20 days by 2025.<sup>39</sup> India, facing price whiplash on its purchases of LNG, early in 2024 began feasibility studies to use depleted hydrocarbon wells to build a gas reserve, along the lines of its own strategic petroleum reserve.<sup>40</sup> Each of these individual efforts could have the spillover benefit of stabilizing the broader regional gas market. Tying such actions to a collective Indo-Pacific gas security strategy would help each individual country further capture such external market benefits, encouraging additional investment and broader participation.

The United States should partner with interested countries in the region on a cooperative research program to expand raw storage by investigating underground gas storage (UGS) potential in the Indo-Pacific. Using underground, as opposed to LNG tank-based, storage could significantly reduce the costs of expanding capacity. In contrast with its widespread application in the United States or Europe, geologic storage is little used in the region. It represents only about 1 percent of the global total (Japan has operated a few wells in Niigata prefecture since the 1980s,<sup>41</sup> and China in 2021 pushed to develop its UGS capacity with dozens of wells representing about 4 percent of annual demand as of 2020.<sup>42</sup>) Although more than 80 percent of storage capacity globally uses depleted oil or gas reservoirs, which are less widespread in the Indo-Pacific region, gas can also be stored in aquifers, salt caverns, or even abandoned mineshafts.<sup>43</sup> Efforts to this end could include cooperative geologic mapping activities, offshore opportunities, or joint research on the use of novel storage media such as mines.

### **Bunkering**

Building additional regasification infrastructure—for example, smaller floating offshore units—can create spare capacity near demand centers if internal gas distribution networks are disrupted. Singapore last year announced that it is planning to establish a second LNG import terminal to provide additional domestic capacity and to act as a bunkering hub for LNG.<sup>44</sup> A floating storage and regasification unit (FSRU), which could be deployed to other locations, is being considered. Likewise, equity ownership in LNG tanker ships by consuming countries can be an effective form of “floating” storage of gas at sea en route to buyers.

## **Buffering**

In Japan, METI initiated a “Strategic Buffer LNG” program that would allocate cargoes from domestic buyers to key utilities facing shortages in the event of a crisis. The scheme’s first supplier, JERA, will provide one cargo a month during the winter months to the reserve. This will be expanded to additional importers over time.<sup>45</sup>

## **Commercial Cooperation**

Greater bilateral cooperation on energy policy can begin at the commercial level. No nation in the Indo-Pacific is energy independent, but coordinating supply agreements in the private sector—with government support—can enhance mutual security through LNG trading and supply chain flexibility. Japan and Korea recently announced that their national importers JERA and KOGAS, respectively, will collaborate on LNG joint procurement and cargo swaps.<sup>46</sup> In addition, the Singaporean government expects to establish a centralized gas company for the procurement of LNG, which will begin making purchases in 2026.<sup>47</sup>

Private companies can play an important role in helping countries achieve national energy security while at the same time opening new markets. In October, Italian producer ENI signed an agreement with JOGMEC to enable Japanese financial institutions to provide financial support for ENI’s LNG project in Mozambique in exchange for potential offtake from the plant.<sup>48</sup> Separately, the US Export-Import Bank has taken a role in this project through project finance, and further such investments should be encouraged.

## **Information Sharing**

More extensive regional gas data sharing and modeling would have their own geopolitical and economic sensitivities but could also help provide market stability (or at least efficiency) through transparency; for example, by building off the existing but somewhat limited Japan-based JODI-Gas data-sharing effort, starting with a small coalition of those participants willing to share more detailed information than they do today.<sup>49</sup> Enhanced data sharing could further open opportunities for clever, coordinated regional gas resilience efforts through a more ordered demand-side rationing or prioritization framework.

For example, Taiwan’s gas demand—set to grow substantially to meet 50 percent of its power generation needs under its current energy policy—is increasingly centered on its power sector, whereas gas is used more broadly across the residential/commercial and industrial sectors in Japan and Korea. Given Taiwan’s electric grid’s low spare capacity, its ability to reduce demand through fuel switching would be further constrained during a regional crisis. Could Japan or Korea compensate as third parties on the demand side by selectively idling industrial production to limit its own gas needs and be compensated for doing so? Although these are difficult questions with complex trade-offs, it would be better to begin discussing them in a neutral environment before some disruption occurs, rather than trying to stitch together norms and rules on the fly during a crisis—as Europe tried to coordinate gas consumption, storage, and transport rules across EU countries in real time, and with life-or-death consequences, in the run-up to the winters of 2022 and 2023.

#### **4. IMPROVE THE SECURITY OF BASIN SHIPPING LOGISTICS AND CRISIS PLANNING**

As stated, energy security among import-dependent countries in the Indo-Pacific has traditionally focused on diversifying across suppliers so that geopolitical or other disruptions affecting a single supplier—for example, Saudi Arabia or the UAE—would not leave an Asian buyer without an energy supply. Some buyer countries in Asia have layered on that a desire to do business with particular supplier countries with which they wished to maintain broader positive diplomatic or trade relationships. Taiwan, as just one example, has long been concerned about which country their energy supply is coming from and has worked to diversify its gas supply, such that in addition to Middle East sources, 40 percent comes from Australia and Papua New Guinea, and 10 percent now comes from the United States.<sup>50</sup>

But today's security environment means that potential geopolitical conflicts are no longer confined to distant global suppliers in the Middle East, Africa, or Russia—in fact, many flash-points now exist within the Indo-Pacific itself. This situation adds new dimensions to the regional gas security question.

For example, buyer countries in the Indo-Pacific may face direct threats to their own gas import infrastructure. What vulnerabilities do consumers face from limited, high-utilization rate (low-redundancy) regasification and storage facilities or energy import infrastructure that may be geographically clustered?

Or consider control of shipping and logistics. At current usage rates, one LNG tanker comes into Taiwan roughly every thirty-six hours. But compared to oil, with a global maritime trade market full of middlemen, transshipments, and even at-sea transfers, the global LNG shipping fleet is small and centralized—just a few hundred LNG ships exist globally. When Korea made the policy decision to pursue natural gas and rapidly decrease its heavy reliance on coal, it identified the control of shipping as a national priority. Aided by its national champion shipbuilding industry and its specific strategy to build out and control its national LNG fleet, Korea became the world's largest builder of LNG ships. Those developments did not occur in other major Indo-Pacific LNG buyers such as Taiwan. This matters, for example, to the extent that a regional conflict could involve seller, buyer, or flagged shipping firms (or domiciled insurers and port owners). There is also the potential for third-party diplomatic pressure on the host countries or firms for any of those three market participants to divert cargoes or not complete even contractual deliveries.

To mitigate this emergent risk, the United States should work with Indo-Pacific allies and partners to collectively map what vulnerabilities on gas shipping and delivery logistics might exist in different conflict scenarios and then to identify contingency plans to respond in case of such disruptions. Such responses might include interrupt agreements for delivery from friendly suppliers, state-backed first-loss insurance offers (as pioneered by Western partners for grain shipments in the Black Sea), planning for vessel escorts, orderly rerouting around conflict zones, or even purchase and reflagging/recrewing of ships. Mapping these vulnerabilities and developing responses to them could be done on a neutral tabletop planning basis among a broad group of participating countries; for example, by building off the popular

regional gas security exercises already run by groups such as APEC Energy Working Group to understand basin market dynamics if disruptions, such as a closing of the Strait of Malacca, occur.<sup>51</sup> These discussions could extend to more sensitive wargaming consultations on a private bilateral or small group planning basis that would include military, diplomatic, and commercial energy market professionals.

## **5. SUPPORT SUPPLY CHAIN INTEGRITY AND THE SOCIAL LICENSE FOR GAS**

As we discuss unresolved energy security questions around gas in the Indo-Pacific, it is still important to recognize that any sustainable energy strategy must be one that balances security with affordability and environmental impact. In the United States and elsewhere in Indo-Pacific, there remains continued social and public concern about the climate impacts of fossil fuels, including natural gas—as evident, for example, in recent US diplomatic efforts to limit international development bank funding even for natural gas projects. These concerns extend both to gas’s direct emissions when combusted and unintended methane emissions from gas systems at the upstream, midstream, and downstream levels.<sup>52</sup> A collection of new studies—some enabled by an emerging generation of cheap drone or satellite remote sensing, technology that will only become more common and available—point to significant variability in system leakage rates from oil and gas operations, incomplete flaring, operational venting; and leakage from gathering infrastructure, closed wells, and even municipal distribution systems and end-use appliances.<sup>53</sup> Importantly, however, many of these indirect emissions can be fixed, and often at low cost compared to the public or even purely private benefits of doing so. A combination of technology, policy, and business models arguably offers the potential to develop a more transparent, even certified “well-to-flame” regional gas or LNG supply chain.

Although basin-level estimates vary, US methane emissions per unit of gas production are fairly low, compared to estimates for Russia, Iran, and Venezuela, and there is the potential for the United States to further reduce the methane intensity of its natural gas supply chain to differentiate itself both in terms of reliability and the environment.<sup>54</sup> Whatever the current political landscape, such steps will ultimately be compelling in preserving the industry’s social license to operate domestically, which has implications for long-term investments in new export infrastructure. Displacing coal with natural gas in the Indo-Pacific is the most powerful at-scale environmental argument. It could also be an attractive area of cooperation for Indo-Pacific regional producers and buyers, for example as proposed by JERA and Korea Gas Corp, with the Coalition for LNG Emission Abatement Toward Net-zero providing a reporting mechanism to determine the carbon intensity of supplies coming into Korea and Japan.<sup>55</sup>

High-income Asian buyers are willing to engage and even lead in this conversation, particularly to the extent that it helps provide reasonable confidence in market development and timelines, suited to different conditions. The 2023 Asia Zero Emissions Community (AZEC), for example, is a decarbonization agreement tailored for each of eleven regional governments to “support policy development and coordination, foster public-private partnerships, strengthen cooperation in the field of decarbonization technologies such as those involving hydrogen and ammonia, as well as carbon capture, utilization, and storage, establish green industrial supply chains, and emphasize the importance of transition finance, among other commitments.”<sup>56</sup>



Additional efforts to address gas leakage and efficiency of use across the LNG value chain are progressing. The United States, Japan, Korea, and the European Commission last year launched an effort to reduce methane emissions.<sup>57</sup> Japan and regional LNG-supplier Australia are working on a partnership to advance cooperation in developing technologies to decarbonize energy systems.<sup>58</sup> In October 2024, JOGMEC signed memoranda of understanding with producers Woodside and ENI to promote the role of natural gas and LNG in the energy transition pathway and to look at mechanisms for monitoring and reducing methane emissions. Other regional partnerships are being considered, including how the Quad countries can develop green (for example, ammonia-fueled) shipping corridors.<sup>59</sup>

There are many more opportunities for countries—for example, India together with the United States—to create a more comprehensive and trusted clean LNG supply chain. These efforts can help differentiate the Indo-Pacific regional gas trade from that offered by less-trusted global suppliers with poor histories of environmental performance or selective energy weaponization. These efforts should engage both the public and private sectors in examining current and proposed industry practices and providing access to the latest technology. APEC, the G7, G20, or ASEAN are all potential conveners. In the private sector, the Asia Natural Gas and Energy Association (ANGEA, cofounded by one of the authors) has acted in this capacity, creating a dialogue with policymakers as they consider energy policy, economic development, and climate goals. Cost-effective steps to improve the environmental footprint of gas in the Indo-Pacific could also indirectly help improve the security and resiliency of the region's supply chain.

## **6. LEVERAGE US-ASIAN GAS RELATIONSHIPS FOR COMPLEMENTARY NEW ENERGY TECHNOLOGIES**

In addition to our traditional LNG commercial relationships, we are increasingly seeing increased cooperation between the United States and firms from the Indo-Pacific in new energy technologies. Spurred in part by the Inflation Reduction Act of 2022 (IRA), carbon capture and storage, hydrogen, ammonia, and biofuel projects in the United States have benefited from partnership and private industry investment from Asia.

The level of tax credits provided by the IRA makes the United States an extremely attractive market for new energy technologies, including an estimated ten-year subsidy of \$13.2 billion to hydrogen projects and \$36 billion to carbon capture and storage.<sup>60</sup> This has led to investment by countries to support their Nationally Defined Contributions under the Paris accord: Mitsubishi has invested in hydrogen projects in Utah and Texas,<sup>61</sup> Australia's Woodside Energy has taken a position at a hydrogen facility in Oklahoma and more recently an ammonia plant in Texas,<sup>62</sup> and JERA Nex (a subsidiary of Japan's JERA) has most recently acquired two 395 megawatt solar facilities in the US South.

Amid broader concerns on fiscal cost, investors are now waiting to see what the next administration and Congress will do and whether these credits will be extended or modified. If the IRA tax credits are scaled back, the United States should still consider how it can attract motivated capital to this sector from its existing Asian energy trading partners. For example, regulatory reforms that reduce the cost and time of building and operating industrial

infrastructure in the United States would support the competitiveness of these new energy technology sectors and many others.

Natural gas has a role in supporting these and other new energy technologies. As a fuel source for dispatchable power generation, it is arguably the most cost-effective form of “energy storage” to address intermittency issues associated with renewables. And through steam methane or autothermal reforming, gas can produce hydrogen and ammonia. Combined with carbon capture and storage, this can reduce the greenhouse emissions along the energy value chain. The United States has the resources—below-ground geology for carbon storage and the potential for an above-ground financial environment for investment—to promote this as a solution to policymakers in Asia.

## **GETTING IT DONE: AN ENERGY AND ECONOMIC SECURITY COUNCIL**

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Although natural gas arguably manifests energy disruptions most acutely, a more dangerous world has exposed the multilateral institutional neglect toward the broader energy interests of the West, including key like-minded energy buyers and sellers in the Indo-Pacific.

The OECD’s International Energy Agency was established through the Paris Energy Conference in response to the first oil crisis of the 1970s and with a charge to represent such Western strategic energy interests given the market hostility of that era. Although it continues to perform an essential role in stabilizing global oil markets and in publishing energy supply and demand data and analyses, its Atlantic-dominated board unsurprisingly in recent decades has prioritized the evolving values and concerns of that core membership group—especially climate and new energy technology concerns and, with those new priorities, a desire to work closely with non-OECD member China (and formerly Russia), given the borderless nature of carbon emissions. Its membership of primarily developed-economy countries has placed less emphasis on energy affordability during a period when the United States was rapidly increasing its own low cost-basis energy production and Europe was able to meet significant industrial energy needs through cheap Russian pipeline gas. These vulnerabilities were laid bare following the Russian invasion of Ukraine and the “demand destruction” deindustrialization in Europe caused by the shortages and high energy prices that followed.

It should be obvious again today, just as it was after the 1970s oil crises, that energy security is and will continue to be a major geopolitical challenge and risk. Energy supply tensions—together with competing and conflicting energy and climate policies—will ensure that energy security remains a key strategic priority for governments. It is particularly important to get this right for poorer nations, those that are import dependent, and industrializing economies—including many in the Indo-Pacific region—that today do not have a satisfactory mechanism to express their views in global energy policy development.

Today’s energy security and affordability concerns are not limited to oil and gas. Spending on renewable energy and infrastructure has grown rapidly since the outset of the decade: Global

investment in electric grids, renewable power, and storage is now higher than that for oil, gas, and coal, according to the IEA. Renewables-oriented and net-zero policies are not just a question of “how to get there in time”; their pursuit also prompts unique challenges to achieving and maintaining energy security and reliability, including from grid intermittency. Countries in the West will pursue different energy pathways depending on a nation’s resources, but energy security and reliability cannot be a lesser good for sustaining social and political support along the way.

Meanwhile, energy has become intertwined with broader emerging Western economic security concerns, such as regarding critical material supply chains. Nascent efforts to diversify critical mineral processing away from an acute concentration in China have had progress in some areas (like rare-earth minerals) but will come under significant economic stress for lower-margin commodities like graphite given differential cost bases, unless Western partners decide to coordinate weighty dual-track market reforms that will have broad implications. The United States has attempted to address this diplomatically through both hub-and-spoke and “lattice” efforts among partners such as the Mineral Security Partnership, but the challenge of a more extensive disentanglement with China’s supply is likely to be greater than these admirable but ultimately ad hoc efforts have the credibility to tackle.

Finally, any substantive treatment of multilateral energy security and affordability needs should be informed by the views of private-sector energy firms—suppliers and consumers of different scales, financiers, and innovators—that Western countries rely on for this market. Their operational insights into the art of the possible, balanced alongside third-party expertise, can make energy policy more pragmatic.

Although different multilateral groupings have made efforts to address the emerging energy concerns of the West in recent years, and their efforts should continue to be drawn on, none today have the ideal makeup or agendas to match the realities of markets and resources. The G7, perhaps the most athletic since the recent energy market disruptions, is limited by not including the emerging and potentially Western-aligned (or at least balancing) countries of South and Southeast Asia that are rapidly becoming the world’s most important energy consumers. APEC has an attractive regional framing and a pragmatic business orientation that could be emulated in structure, but it does not stand for the interests of the West. The Biden administration’s Indo-Pacific Economic Framework has offered a useful regional mechanism for discussion, but further work would be needed to expand the collective ownership of that process that would be required to fulfill the aims of building substantive economic ties between the United States and Asia, as well as Europe. Among existing frameworks, the Quad has the best potential in this space and could be built on. It is aligned in values, and although its membership is perhaps inherently limited, a more fulsome approach to regional energy issues, including fuels such as gas, would be a natural fit for its broader economic and security agenda.

As an alternative to expansion of these existing organizations, we also see value in the establishment of a novel multilateral forum—an Energy and Economic Security Council—for centering the importance of energy security and affordability in the West as a core determinant of our economic vitality and strategic freedoms. Energy could be addressed expressly, or it could arguably be a

major pillar of a broader Western economic security framework in which many such interests and concerns are shared across industrial sectors. Given the applied nature of this problem, it should have a strong private component; for example, in the parallel government and business plenaries adopted by APEC. This would not be an “anti-climate” effort but one in which energy were not simply subsumed as a subset of the global climate policy agenda; a constructive alternative vision, even, were the United States to withdraw from existing global climate conventions. It would also elevate Indo-Pacific regional voices that, despite their long-standing memberships in other Western multilateral organizations, have often been the receivers rather than setters of agendas. This would be a Western energy and economic security framework that comes out of the Indo-Pacific and North America regions but that includes Europe.

At a time when allies and partners in the Indo-Pacific ask us to “do more and talk less,” this discussion shows that there is a rich menu of options for the United States to combine its natural resources, its technologies and commercial expertise, and its security strengths to do just that in building a more resilient regional gas system. As the next US presidential administration and Congress consider how to reweave the fabric of the now badly fraying global economic and security commons that was built up through the first Cold War, and the role for America within it, here is a way that partners in the Indo-Pacific can offer to share in that responsibility and together have agency in delivering on pragmatic agendas for this emerging and dangerous new world. A number of counterparts are actively asking for this presence. Let’s put gas on the diplomatic agenda before the next crisis.

## NOTES

1. This essay is informed by a series of discussions on global energy security held at the Hoover Institution and at Stanford since the February 2022 Russian invasion of Ukraine, including those hosted by Hoover’s Global Policy and Strategy Initiative and the George P. Shultz Energy Policy Working Group in the spring of 2022; hosted by the Stanford Natural Gas Initiative in panel discussions in October 2022 featuring Hoover’s Gen. Sir Nick Carter, the National Bureau of Asian Research’s Mikkal Herberg, and EQT’s Will Jordan and moderated by one of the authors; and through a November 2022 panel on Taiwan’s comparative energy security as part of Hoover’s Project on Taiwan in the Indo-Pacific, featuring discussions with Neil Theobald of the Asian Natural Gas Energy Association. Additional discussions with Herberg and Theobald took place in August and September 2024, along with Philip Lambert and Gregory Lemaire-Smith of Lambert Energy Advisors and Rob Schwiens, chief economist, Chevron Corp, as well as with Dr. Ken Koyama, senior managing director of the Institute of Energy Economics, Japan. A draft was further considered by roundtable participants in the Shultz Energy Policy Working Group’s December 2024 Global Energy Statecraft Workshop held at the Hoover Institution. Essential student research assistance was provided by William Pirone of Stanford University. Constructive ideas or observations included here can be credited to them, and the rest to the authors.
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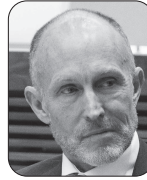
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