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Worldwide coordination: The key to success on achieving carbon neutrality

Take*aways*

- The transition to a carbon-neutral economy will require energy producers, policymakers, and customers to coordinate market developments
- A clear regulatory framework is required to support infrastructure investments
- The energy transition is a great opportunity, and a global imperative, which will require an "all-tools-in-the-box" approach to be successful

Carbon-neutral initiatives: The view from Europe, the United States and Asia

As the driving force behind the energy transition, Europe seeks to become the first continent to achieve carbon neutrality by 2050. The European Commission has released the "Fit for 55" package to facilitate the green transition. It includes stricter regulations and emissions standards for industry, carbon pricing and related taxes, as well as rules to promote investment in low-carbon fuels, technologies and infrastructure. In parallel, the European Union is developing a Carbon Border Adjustment Mechanism, which is expected to come into effect in 2023. Under the CBAM, importers will be required to pay for carbon-intensive products imported into the European Union, to ensure carbon emissions embedded in imported goods are taxed equally, as compared to similar products produced within the European Union.

In the United States, the Biden administration has likewise made reduction of carbon emissions a key pillar of its overall policy. On the first day of his presidency, President Joseph Biden brought the United States back into the Paris Agreement, a legally binding international treaty on climate change. He issued executive orders establishing a task force to improve the government's sustainability efforts and creating a plan to achieve a carbon pollution-free electricity sector by no later than 2035. The executive orders have also sought to curb carbon-intensive power (e.g., coal, oil and natural gas) projects abroad. In addition to the executive actions, he has championed two large spending bills that include substantial incentives for renewable energy and carbon emissions reductions.

Energy-efficient countries in Asia, such as Japan and South Korea, have also set ambitious goals to further reduce greenhouse gas (GHG) emissions by 2030 and achieve carbon neutrality by 2050. Indonesia and Singapore have similarly agreed to implement bold clean energy initiatives. However, perhaps most significantly, China, one of the largest global consumers of energy, has announced its plans to reach peak emissions by 2030 and carbon neutrality by 2060. China, like South Korea, has prioritized hydrogen as an emerging industry, aiming to have 5 percent of China's energy consumption met by hydrogen by 2030.

Massive ramp-up required

Achieving a smooth and cost-effective energy transition will require an "all-tools-in-the box" approach, including an increase in liquefied natural gas (LNG) to support and underpin the transition to a renewables and hydrogen based economy. To successfully navigate the energy transition, producers, policymakers and customers will need to move in step, which will require global cooperation, consistent policy development and regulatory frameworks to provide the certainty required for investments to build the necessary energy infrastructure. Like anything in its infancy, the opportunities are great but so are the risks, due to the regulatory and policy uncertainty.

Russia's invasion of Ukraine and its impact on the global energy transition

Before the Russian invasion of Ukraine, global energy markets were already supply constrained due to the steady reopening of markets following the lifting of COVID-19 restrictions. Energy prices were becoming unsustainably high and rising. The Russian invasion has exacerbated the situation, with significant further increases in LNG and gas prices, which have now decoupled from equivalent crude oil prices. It is a troubling scenario.

Global LNG markets do not seem to have any spare capacity, which could be used to displace Russian gas supplies to Europe. To increase LNG supplies to Europe will require the diversion of supplies from other markets, primarily Northeast Asia and Indo-Asia. As a result, the focus in Europe in the short term will likely be on securing spot or short-term quantities which are uncontracted, before then seeking to secure long-term future supplies from Africa and the United States. In turn, as we have seen recently with Russian crude oil sales, Russian gas and LNG in the future may be diverted to Asian markets, potentially at a discount.

LNG's role in the energy transition

LNG will have an essential role to play in the global energy transition, displacing coal and fuel oils in the power generation mix and providing the necessary reliability to underpin the expansion of renewable power generation. However, there are notable risks:

a. Certain jurisdictions lack clarity on their long-term plans to use gas and LNG in their domestic energy mix. Often, time periods for the planned transition to a hydrogen or renewable energy economy are reduced, which can fundamentally alter the planned return on investment for gas and LNG infrastructure. Policymakers must, therefore, give clear and consistent signals to enable the energy industry to make the investments required in necessary new infrastructure.

b. In the absence of clear regulatory guidance, final investment decisions for LNG infrastructure projects may slow, leading to further supply-side constraints in the market. In turn, LNG/gas prices are likely to remain unsustainably high, potentially forcing end customers to turn back to coal for power production, which is arguably the worst possible outcome from an environmental standpoint.

Renewable energy accounts for 10 percent of energy generation globally, and will need to get closer to 65 percent or 70 percent in order to achieve carbon neutrality by 2050.

Renewables' role in the energy transition

Renewable energy has been a consistent and effective force in the transition away from carbon-based fuels for over a decade. Global investment in the low-carbon energy transition has more than doubled since 2010. Solar energy, offshore wind and battery energy storage, in particular, have led this surge in the last couple of years.

These investments have impacted both the global power mix and overall GHG emissions. In the United States alone, there has been a steady rise in renewable energy and a decline in the contribution of coal to the overall energy mix since 2005 – coal, once the dominant fuel, now contributes roughly the same share as each of nuclear power and renewables. At the same time, there has been an increase in natural gas-fired power, a lower-emitting fuel than coal, which is the largest contributor to the U.S. energy mix. In conjunction with these changes, carbon dioxide emissions from energy consumption in the United States have declined consistently since 2007.

While investment has been significant over the past decade, renewable energy still only accounts for 10 percent of energy generation globally, and will need to get closer to 65 percent or 70 percent of global energy generation in order to achieve carbon neutrality by 2050. Such a lofty objective will require governments to maintain consistent and robust incentives to encourage renewable energy deployment and "price" the cost of carbon into new energy projects. As for the United States, the federal government and regulators will need to find ways to accelerate the new-build transmission from renewable energy-rich parts of the country to more densely populated areas.

Hydrogen's role in the energy transition

In addition to the use of hydrogen in fuel cells, technology is being developed to increase the proportion of hydrogen that can be used in gas-fired turbines. There have been a number of successful pilot projects, including in the United Kingdom and the Netherlands, which have demonstrated the potential of using existing natural gas infrastructure to transport hydrogen blended with natural gas. However, hydrogen is not the same as natural gas. Hydrogen is the lightest and smallest chemical element, which results in higher leakage rates. Also, hydrogen is highly combustible and corrosive, which presents obvious challenges.

In addition, as hydrogen has a low volumetric energy density, finding the most efficient means of long-distance transportation can be challenging. Conversion to ammonia has attractions, but the process results in significant energy losses.

To produce green hydrogen also requires significant quantities of water. As the majority of green hydrogen projects are planned for construction in jurisdictions with high temperatures and limited water resources, such as Australia, the Middle East, and North Africa, concerns arise over the volume of water needed. While solutions to secure and preserve appropriate water supplies exist, including utilizing desalination or reverse osmosis plants, these raise concerns as to the "green" credentials of such hydrogen sources.

Moving forward, we anticipate there will be a significant focus on the "hydrogen rainbow." Despite "hydrogen being hydrogen" from a use perspective, for end customers, there will be a strong focus on the "type" of hydrogen being supplied in order to meet ESG commitments, regulatory reporting requirements, and possible carbon border taxes. As a result, there will be a heightened focus on the verification and certification of hydrogen production and potentially bespoke liability regimes to reflect the particular requirements of end customers.

About the authors

James Atkin advises companies in the oil & gas, energy and infrastructure sectors with their international energy investments. Widely recognized as a leading energy lawyer with a Band-1 ranking from *Chambers Global*, James advises clients in the energy sector on transactions in Asia, Australia, Europe, the Middle East, Africa and North America. He also has extensive experience advising on large-scale energy projects, LNG sales arrangements, and energy-related mergers and acquisitions. In *Chambers UK* 2021, James was described as "very knowledgeable of the industry, very easy to work with and very efficient."

Brendan M. McNallen is a partner in the Energy & Natural Resources Group. His practice focuses on project development and finance in the energy generation, energy storage, transmission and distribution, and infrastructure sectors, with a specific focus on renewable energy. He represents developers, owners, manufacturers, and lenders in the development, supply, construction, and financing of onshore wind, offshore wind, solar, and battery energy storage projects. Brendan also represents utilities in the procurement and construction of transmission and distribution facilities, procurement programs, and program management activities. He has advised on energy projects throughout the United States and around the world, including Europe, South America, the Middle East, Mexico, and Canada.

Emma L. Short focuses her practice on litigating intellectual property matters across a broad range of industries, including the energy industry. She has experience in a range of technologies, including patents involving the distribution and customization of computer applications, as well as patents where she is able to utilize her background in biochemistry. In addition to her intellectual property practice, Emma has experience litigating general commercial disputes and mass tort litigation in state and federal courts.

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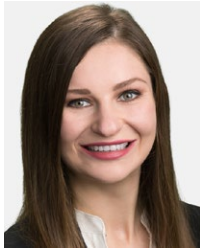

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