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Choosing Wisely: How the Biden Administration can Build a Better Coalition on International Energy and Climate Policy in a Post-COVID World

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Introduction

President Joe Biden and Vice President Kamala Harris have inherited a country deep in crisis. After the tumult of 2020, the new administration takes the helm amid high unemployment, a sluggish economic recovery, soaring national debt, and a staggering 390,000 Americans dead from a pandemic that shows few signs of slowing before new vaccines can be distributed. The depth of the country's political polarization, evident in the demand for a national racial reckoning throughout summer 2020 in the wake of the murder of George Floyd and multiple cases of police brutality, was starkly demonstrated again when 137 members of Congress and seven senators attempted to overturn the results of the 2020 election on January 6, 2021. That attempt to use the historically ceremonial counting of Electoral College votes to overturn Joe Biden's Electoral College and popular vote victory added fuel to a violent insurrection, encouraged by President Donald Trump and cheered by some members of Congress, which desecrated the US capital and resulted in multiple deaths. As of this writing, the US House of Representatives has impeached the President for an unprecedented second time, with bipartisan support. Congress is still debating how and whether the perpetrators and instigators of this act of domestic terrorism should be held to account.[1] The situation abroad is hardly more encouraging; the US alliance system has been brought under tremendous strain after four years of "America First,"

The Global Energy Center promotes energy security by working alongside government, industry, civil society, and public stakeholders to devise pragmatic solutions to the geopolitical, sustainability, and economic challenges of the changing global energy landscape.

1 The authors recommend a recent analysis by Dr. Bruce Hoffman, which delineates why the application of the label "terrorism" to these actions is appropriate and provides a deeper discussion of the consequences of these events for the US political system more broadly. Bruce Hoffman, "Domestic Terrorism Strikes U.S. Capitol, and Democracy," Council on Foreign Relations, January 7, 2021, https://www.cfr.org/in-brief/domestic-terrorism-strikes-us-capitol-and-democracy.

An explosion caused by a police munition is seen while supporters of US President Donald Trump gather in front of the US Capitol Building in Washington, DC, on January 6, 2021. *REUTERS / Leah Millis*

key partners have grown doubtful of the US commitment to its alliances, and rising and revisionist powers seek to actively challenge US global leadership. Hovering over all of these problems is rapidly accelerating global climate change, as the world remains far off track from meeting the aspirations of the 2015 Paris Agreement (abandoned by the Trump administration) despite a year of historically low energy consumption amid a dangerous global pandemic wreaking havoc on normal life for billions and causing a 7 percent global drop in carbon dioxide emissions.[2] A more complex scenario for new leadership could hardly be imagined.

After an electoral victory optimistically defined with "America Is Back," President Biden has asserted that the United States will regain its mantle of leadership of the liberal order, reset its international partnerships, and, perhaps most importantly, rebuild as a clean, green superpower putting the global community back on track to meet its climate commitments and securing a sustainable trajectory for future economic growth.[3] The Biden campaign—first in its original climate plan and later in the Build Back Better plan—envisioned a US energy and infrastructure system that is firmly grounded with a new, to-be-determined nationally determined contribution (NDC) to the Paris Agreement while leveraging US diplomatic, political, financial, and trade relationships to encourage other countries along a similar, more sustainable path as the world enters a critical decade for mitigating the climate crisis.

Laudable and necessary as these goals may be, all of this will prove easier said than done. Indeed, as the Biden administration looks to reset the global trajectory on climate, it must carefully balance its strategy with pragmatism and sensitivity to the situation facing many other governments, since they face hard choices, many in equally politically challenging contexts. This analysis reviews likely tensions in the Biden energy and climate strategy, and it identifies four key elements in

2 Robert McSweeney and Ayesha Tandon, "Global Carbon Project: Coronavirus Causes 'Record Fall' in Fossil-Fuel Emissions in 2020," *Carbon Brief*, December 11, 2020, https://www.carbonbrief.org/global-carbon-project-coronavirus-causes-record-fall-in-fossil-fuel-emissions-in-2020.

3 Joe Biden (@JoeBiden), "America is Back," Twitter, November 24, 2020, 1:45 p.m., https://twitter.com/joebiden/status/1331307848647761925.

that eventual strategy for which the new administration must choose wisely to maximize opportunities, bolster its own critically important policy goals, and build bigger, broader, and more effective coalitions of support.

Looking Ahead: Tensions within the Biden Energy and Climate Strategy

The Biden administration's stated approach to international climate diplomacy might be summed up as leading by example. After the Trump administration's announcement of its intent to withdraw from the Paris Agreement in 2017, the Biden-Harris administration enters office acknowledging that, as newly appointed International Climate Envoy John Kerry recently admitted, "it's not so simple for the United States to regain its credibility."[4] These cornerstones of the domestic agenda are commitments to reach net-zero US emissions by 2050 and carbon-pollution-free US power generation by 2035 through an Energy Efficiency and Clean Electricity Standard (EECES) and a $2 trillion accelerated spending commitment on clean, low- and zero-carbon energy technologies.[5] Post-election, the transition team made the prioritization of climate policy through every aspect of federal governance clear, with a range of high-profile appointments to key roles including former Secretary of State John Kerry as international climate envoy; former EPA Administrator Gina McCarthy as domestic climate coordinator and counterpart to Secretary Kerry; former Federal Reserve Chair Janet Yellen as secretary of the treasury; and former Barack Obama White House senior climate official Brian Deese as director of the National Economic Council. All of these appointees are vocally committed to fighting the climate crisis, knowledgeable about the authorities available in their new roles, experienced in federal leadership, and well equipped to integrate the climate agenda into their respective roles and facilitate the broader Biden strategy. Indeed, the Biden economic recovery strategy, the Build Back Better plan, envisions an innovation-led stimulus with the United States leading the world on clean energy development, scaling, and deployment, while empowering and prioritizing US workers in a broad-based, clean energy revolution.

But, despite the concerted groundwork and obvious signaling of intent, the Biden administration's bid to reassert US leadership on climate change will contend with significant tensions, both at home and overseas. At home, the Biden administration must manage a deeply polarized US electorate and build upon (or just retain) its winning electoral coalition in anticipation of the 2022 US midterm elections, as well as the 2024 presidential election. The Biden-Harris ticket successfully rebuilt the "Blue Wall" of key Rust Belt and Midwestern US states while adding newcomers (Georgia and Arizona) to the Democratic column. The Biden message of Build Back Better, with its emphasis on economic revitalization, domestic workers, supply chains, strengthening the middle class, and more effective management of the COVID-19 crisis, likely facilitated these major inroads in formerly "blue" and "purpling" states.

The congressional picture is similarly complex. The 2020 election cycle came to a dramatic end in two Georgia runoffs in early January, with the surprising victory of two Democratic Senate challengers ousting Republican incumbents, handing control of the Senate to Democrats by a single-vote margin (including the new vice president as tiebreaker). At the same time, the Democratic Party's formerly robust House of Representatives majority is now reduced to the thinnest margin in years for either party, with just an eleven-seat advantage over the GOP.[6] Despite having technical control over a unified government, the underlying political context has significant implications for what the Biden White House can do on its energy and climate agenda. The passage of major components of the Biden climate plan, such as the EECES or mandated power sector emissions cuts,

4 Steve Inskeep, "As Climate Envoy, Kerry To Seek 'Ambition' With 'Humility,'" National Public Radio, December 10, 2020, https://www.npr.org/2020/12/10/944572621/as-climate-envoy-kerry-to-seek-ambition-with-humility%3Cspan%20id=%22ms-outlook-android-cursor%22%3E!-OMSelectionMarkerEnd-.

5 The authors provide a fuller discussion of these proposals in their preceding analysis. David L. Goldwyn and Andrea Clabough, *What's at Stake for Energy in the 2020 Election: An Update*, Atlantic Council, August 17, 2020, https://www.atlanticcouncil.org/in-depth-research-reports/report/whats-at-stake-for-energy-in-the-2020-election-an-update/.

6 As of publication, two additional House seats remain outstanding as vacancies. For a full breakdown of the 117th Congress House of Representatives, see "117th Congress House Lineup," House of Representatives Press Gallery, accessed January 7, 2021, https://pressgallery.house.gov/member-data/party-breakdown.

via legislation will still be challenging as the party's senators and representatives from purple states may view a robust climate package as a lower priority (versus, for example, healthcare, tax reform, or voting rights legislation), and others may be hesitant to support policies that could be perceived as increasing energy costs for average Americans or overly punitive to local energy industries, such as natural gas producers in Pennsylvania. Even a relatively modest effort, such as renewed US allocations to the global Green Climate Fund, risks attack by Republicans as a waste of taxpayer dollars on a progressive agenda item. Furthermore, the new administration will be keen to avoid unnecessary fights over particularly volatile or controversial issues (e.g., a federal carbon pricing mechanism, or a perceived attack on energy-producing states where the oil and gas industry remains economically important). Securing a major spending package on areas with high prospects for bipartisan cooperation (such as infrastructure) would ideally be the result of a broad coalition effort with significant "wins" for both parties. Inclusion of measures like an EECES or new, formalized Paris Agreement targets may challenge Democrats to consider abandoning the filibuster in order to pass a major bill without Republican votes (assuming that the entire Democratic Senate caucus remains unified).

Even with the ability to pass key legislation through the Senate, by nixing the filibuster or through more limited budget-reconciliation mechanisms, any legislative package with major energy and climate provisions must appeal to a wide range of US voters, as well as key constituencies such as labor unions. The bipartisan elements of the American Innovation and Manufacturing (AIM) Act, many of which were included in the recently passed year-end congressional omnibus package, are an exemplar of the possibilities for genuine collaboration, but the Biden administration has been clear that it seeks US energy system transformation considerably beyond the provisions of that bill.[7] Finally, the Biden administration will want to constructively engage the private sector and US business community on the energy transition. As recent environmental and climate-focused commitments from Microsoft, Google, and Amazon demonstrate, there is a growing awareness of the importance of environmental, social, and governance (ESG) issues for companies' consumer, and especially shareholder, relations. A thoughtful approach to the US business community could incentivize the support of these powerful economic stakeholders in the Biden strategy, and simultaneously further weaken the Republican Party's hold over this corner of its traditional constituency. The Biden team, knowing it has just two guaranteed years to fully control the policy agenda, will want to build bridges—literally and figuratively—as it looks to invigorate the US economy post-COVID-19 and build a compelling case for keeping the party in power and re-electing the president.

Looking abroad, the Biden White House faces a similarly complex situation. An international climate strategy must account for partnerships with diverse countries at various stages of economic development, each with their own goals and interests in the global energy transition. Some of these governments may not necessarily share the Biden vision, or they may have serious, legitimate questions about what US leadership on climate will mean for them. The European Union (EU) has committed to the most ambitious domestic climate program worldwide—the European Green Deal—facilitated by the proposed European Climate Law. While the European Green Deal shares the Biden administration's objective of net-zero emissions economy-wide by 2050, the Green Deal's initial framework suggests a more rapid phaseout of all fossil fuels (including natural gas) from the European economy than may be possible in the United States, even under the Biden administration's historically strong climate plans.[8] There will be many opportunities for US-EU cooperation, particularly with respect to technology, innovation, financing, and the harmonization of standards and regulations. However, there could be obstacles, especially in the implementation of the carbon border adjustment mechanism, to ensure that any such mechanism is transparent and nondiscriminatory.

7 Nick Sobczyk and Geof Koss, "Congress Passes Major Climate Bill in Lame-Duck Surprise," *E&E News*, December 22, 2020, https://www.eenews.net/eedaily/stories/1063721309.

8 In particular, the European Union may take a stronger stand on persistently high US methane emissions associated with oil and gas production, with the bloc's hardening position on methane most clearly indicated in the EU Methane Strategy component of the European Green Deal. "A European Green Deal," European Commission, accessed December 19, 2020, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#actions.

In East Asia, Japan and South Korea have recently charted their own new trajectories with bold plans to achieve net-zero carbon emissions by 2050, but these governments may have their own views (as articulated in their Paris Agreement commitments, as well as their more recent pledges) on what stable energy supply access and resilience means for their economies. These governments are planning on natural gas to replace more polluting fuels (like coal, diesel fuel, and oil) in power generation, industry, and transportation, as well as provide reliability for a growing share of intermittent renewables in their national grids. These nations, as well as many Southeast Asian countries, may need the US to remain a stable and substantial hydrocarbons supplier to ensure a competitive gas market so gas can compete with coal as a reliable fuel. Many countries in East, South, and Southeast Asia already have substantial shares of nuclear energy and may utilize advanced and small scale nuclear in the context of their energy transitions. Likewise, the industrializing Indo-Pacific region is expected to drive global economic growth, energy demand, and greenhouse gas (GHG) emissions well into the future, but the major developing economies throughout this region are also largely dependent on carbon-intensive fuels, especially abundant native supplies of coal.[9] These governments may question the aggressive decarbonization approach increasingly popular in the developed West, particularly efforts to rapidly phase out all categories of fossil fuels. Latin America and Africa both share growing and urbanizing populations eager to join the global middle class and, compared to other regions, are relatively low contributors to accelerating global emissions; in both contexts, policymakers may chafe at proposals that they perceive as undermining all-important economic growth and employment objectives in the post-COVID recovery period. The broader question of protecting workers on all continents—from coal miners in South Africa to unionized labor in Argentina—in a "Just Transition" (a core tenet of the Paris Agreement) is very much an open one, for which a Biden administration will have to articulate an answer. Clearly, at the outset, the Biden administration cannot expect much domestic or international agreement on what it should do next.

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In this dynamic context, an administration charting a new course for international climate diplomacy must carefully balance competing priorities to maximize the efficacy of its strategy. Fundamentally, the Biden administration must accelerate the energy transition at home while protecting its control of government, and also raise global ambition on decarbonization while respecting the needs and prerogatives of its partners and potential allies. This paper focuses on four major areas—an inclusive climate strategy, relationships with hydrocarbons producers, a role for US natural gas, and access to critical technologies—in which the Biden administration is bound to face difficult choices and must carefully thread the needle as it builds a new global coalition in the fight against climate change.

An Inclusive Climate Strategy

It would be difficult to overstate the transformative moment of the 2015 Paris Agreement, which—for the first time—saw nearly every country worldwide, across economic and development divides, commit to a shared climatic goal, including a specified national contribution and explicit plans for achieving it. There was also a recognition (retained at Conferences of the Parties (COPs) ever since) that the vast economic disparities among parties (especially between the most-developed, developing, and least-developed nations) meant that every country could not be held to equivalent, absolute standards for emissions reductions. The United Nations Convention Framework on Climate Change (UNFCC) encapsulates these realities with the phrase "common but differentiated responsibility and respective capabilities," noting that individual countries' "social and economic conditions" mean that their respective paths to implementing an energy transition and emissions reductions will necessarily vary based on each country's starting economic and development trajectory.[10] The NDCs for Sweden, Vietnam, and Sierra Leone are markedly different from one another, but each (theoretically) contributes to the shared whole. A key element of this approach is the Green Climate Fund, instituted by the

9 Indeed, a recent IEA analysis projects that coal demand in the Southeast Asia region will grow by more than 5 percent annually through 2024 while coal-fired power, driven by demand in Asia, remains the top global power fuel through the medium-term outlook. "Thanks to Asia, Coal Is Still King Worldwide," IEA Clean Coal Centre, May 28, 2020, https://www.iea-coal.org/thanks-to-asia-coal-is-still-king-worldwide/.

10 "The United Nations Framework Convention on Climate Change," United Nations, May 9, 1992, https://unfccc.int/resource/docs/convkp/conveng.pdf.

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Key recommendations for how to approach some of the most challenging energy and climate policy questions

An Inclusive Climate Strategy	Adopt a flexible and comprehensive message that considers policy drivers in different countries while striving for greater climate ambitions
	Deploy available US technical assistance for frameworks, pricing, market structures, and technology within a whole-of-government approach
	Leverage US financial resources, frameworks, and convening power among multilateral institutions to make the developing world's energy transition more attractive to investors
	Offer flexibility in supporting various governments' unique approaches to transition and avoid picking winners
Relationships with Hydrocarbons Producers	Incentivize the most efficient, lowest emission oil and gas development, especially in middle and low-income producers, as they transition
	Model what a constructive role for today's oil and gas industry will look like within the long-term energy transition
A Role for US Natural Gas	Require that future US natural gas development and infrastructure approvals quantifiably fit into the US decarbonization strategy
	Consider creating a voluntary methane reduction program to incentivize US industry improvements, in tandem with new regulation
	Acknowledge a role for US natural gas supplies, affirm the reliability of US and LNG exports in countries where access to natural gas can have verifiable climatic, environmental, energy security, economic growth, or and public health benefits
Access to Critical Technologies	Develop a comprehensive, multilateral strategy to ensure a stable, sustainable critical minerals supply
	Treat climate-focused technological innovation as "America Leads" instead of "America First"

Paris Agreement, which is intended to serve as a financing vehicle for lower-income countries to invest in the infrastructure and resources that would support realization of their most ambitious climate commitments. The original Biden campaign climate plan acknowledged the role (and limitations) facing developing countries pursuing a transition, asserting that the United States would recommit to the Green Climate Fund, support those developing countries most at risk from climate change, and support international financial institutions (IFIs) to facilitate debt relief geared toward climate mitigation and adaptation.[11]

Unfortunately, the Biden administration will not only come into office with a US economy in recession, but it will also face economic devastation the world over that has been especially acute for those developing countries it seeks to support in the energy transition. The International Monetary Fund (IMF) has warned of a "lost decade" in the 2020s for low-income developing countries. Amid the simultaneous public health, social, and economic crises of 2020, "absent a sustained international effort…permanent scars are likely to harm development prospects, exacerbate inequality, and threaten to wipe out a decade of progress reducing poverty."[12] The IMF cites preexisting high public-debt levels, lowered export-product prices, a depressed global tourism industry, and reduced remittances as especially ruinous consequences of the pandemic for these developing economies. Even diversified, industrializing and

11 "The Biden Plan For A Clean Energy Revolution and Environmental Justice," Biden For President, accessed December 23, 2020, https://joebiden.com/climate-plan/.

12 Daniel Gurara, Stefania Fabrizio, and Johannes Wiegand, "COVID-19: Without Help, Low-Income Developing Countries Risk a Lost Decade," International Monetary Fund, August 27, 2020, https://blogs.imf.org/2020/08/27/covid-19-without-help-low-income-developing-countries-risk-a-lost-decade/.

developing economies have not entirely escaped the damage; India has entered a formal recession with -7.5 percent gross domestic product (GDP) growth year on year, Brazil is forecast at -4.7 percent growth for the year, and Mexico may see -9.3 percent growth with full recovery delayed until the end of 2023.[13] At the same time, these same countries are most at risk from the devastating, globalized consequences of climate change. The World Bank warns that low- and middle-income countries could soon face losses of more than $400 billion a year as a direct result of climate change, and asserts that these governments now "have a once-in-a-generation chance to set themselves on a sustainable, inclusive and resilient development path."[14] However, in the wake of a brutal pandemic, seizing that chance is another matter.

A Biden administration must, therefore, craft its climate agenda targeting the developing world with sensitivity to these governments' needs and desires, both now and looking ahead. To that end, an inclusive climate strategy should do the following.

★ **Adopt a comprehensive, flexible message which considers all policy drivers of nations striving for higher climate ambitions.** The merits of decarbonization as a means to an end are widely accepted among stakeholders and policymakers in the European Union and the United States. However, the conversation in many developing countries around energy efficiency, fuel switching to lower-carbon fuels, and phasing out of the most heavily polluting resources is, in many cases, more salient as a question of air and water quality, improving public health outcomes, and restoring land or preventing its degradation.[15] Energy security—and, increasingly, self-sufficiency—is a primary policy driver, from countries like Japan, the Republic of Korea, and Singapore, which lack abundant native natural resources, to Western Europe with declining resources, to countries like Mexico, Poland, and China, which have national security concerns about dependence on imports of any kind. With broader decarbonization in mind, a Biden administration should acknowledge the wide array of reasons that governments are interested in the energy transition, and how best to support them in meeting their goals and the needs of their constituents. Recognizing the many reasons why these governments are interested in a transition is the best pathway to building durable international coalitions around a shared goal.

★ **Deploy available US technical assistance for frameworks, pricing, market structures as well as technology within a whole-of-government approach.** The United States already has vast resources at hand that can facilitate the technical and technological changes necessary for a sustainable transition in many developing countries. Efficiency improvements and cheapening prices for technologies like battery storage, wind, and solar power—albeit welcome—are, in many cases, not sufficient to drive systemic transformation for these countries' energy systems. Rather, the key barriers are often lingering subsidies for highly polluting assets (e.g., state-owned coal-generation plants), the absence of building, lighting, or appliance standards, weak bureaucratic capacity, outdated or byzantine energy market designs, and regulatory frameworks that are unsuitable for, or discourage, emissions reductions (e.g. zoning and

13 Eric Bellman, "India's GDP Shrinks as Covid-19 Keeps Stranglehold on Economy," *Wall Street Journal*, November 27, 2020, https://www.wsj.com/articles/indias-economy-contracted-7-5-last-quarter-11606480136; Elijah Oliveros-Rosen, "Economic Research: Latin America's Economic Recovery From The Pandemic Will Be Highly Vulnerable To Setbacks," *S&P Global Ratings*, December 1, 2020, https://www.spglobal.com/ratings/en/research/articles/201201-economic-research-latin-america-s-economic-recovery-from-the-pandemic-will-be-highly-vulnerable-to-setbacks-11760209.

14 "Climate Change," World Bank, last updated September 30, 2020, https://www.worldbank.org/en/topic/climatechange/overview.

15 The World Economic Forum, for example, estimates that air pollution kills more Africans than unsafe water and sanitation or childhood malnutrition. Analysts note that young Africans and those living in the continent's rapidly growing urban centers are increasingly vocal in demanding that their governments introduce regulatory changes and invest in technologies and infrastructure to reduce air pollution. Uganda's state-owned Kiira Motors Corp., the continent's first domestic production plant for electric cars and buses, is an example of one initiative to bring zero-emission transportation to Kampala's three million residents in a new effort in that city's multi-decade struggle with poor air quality. Laura Millan Lombrana and Fred Ojambo, "Africa's First Electric Bus Plant Will Industrialize Uganda While Fighting Pollution," Bloomberg Green, August 11, 2020, https://www.bloomberg.com/news/articles/2020-08-11/africa-s-first-electric-bus-plant-industrializes-a-region?sref=ew50vVq2. See also Tolu Oni, "How the Power of Youth Can Help Fight Air Pollution Across Africa," World Economic Forum, September 6, 2020, https://www.weforum.org/agenda/2020/09/africa-air-pollution-youth/.

land-use policies). All of these are areas where the United States has seen major developments in recent years. In particular, the US regional and interstate transmission organizations (RTOs/ISOs) have facilitated major innovations in power market designs bolstering renewable energy, battery storage and, most recently, carbon pricing. Moreover, the Departments of Energy, Commerce, and State already have a breadth of experience providing technical assistance to US allies and partners. New federal programs like Asia Enhancing Development and Growth Through Energy (EDGE) and América Crece are already funded and resourced, and can be leveraged under a new administration to focus technical efforts on climate and sustainability priorities in the developing world. Likewise, emerging bilateral and multilateral partnerships, such as the Japan-United States Strategic Energy Partnership (JUSEP), could potentially act as force multipliers on this front by combining multiple governments' access, influence, and resources.[16]

★ **Leverage US financial resources, frameworks, and convening power among multilateral institutions to make the developing world's energy transition more attractive to investors.** Indebtedness, limited access to credit, and strained public budgets are endemic problems for many developing country governments, and have been amplified by the economic impacts of the pandemic. With genuine recovery many months, or possibly years, into the future, funds that may have been available to support critical upgrades to insufficient or absent infrastructure (e.g., high-voltage transmission lines, electrified transportation such as railways, and electric vehicle charging) essential to sustainable economic growth may simply be gone or reallocated to immediate public health priorities. Beyond recommitting to the Green Climate Fund, the US government has tools on hand to improve the investment environment and advise on financing frameworks for important, but often expensive or complex, projects. The US International Development Finance Corporation (DFC) has been expressly empowered to offer debt financing, equity investments, risk insurance, and financial technical assistance, and now boasts more than eight hundred completed or active projects worldwide.[17] The DFC and other smaller-scale bilateral-development partnerships (such as the Biden administration's proposed $4 billion plan for development in Central America) might prioritize transition-specific or otherwise sustainable investments, demonstrating how these development initiatives fit within, and in support of, a global sustainable future.[18]

★ **Offer flexibility in supporting various governments' unique approaches to transition and avoid picking winners.** The energy transition, especially within the developing world, will not be one-size-fits-all. Throughout Latin America, Eastern Europe, Africa, the Middle East, and developing countries in Asia are vastly differing resource and financial endowments, geographic and climatic assets, political risk tolerances, existing infrastructure, and knowledge bases, before even considering disparities in respective timelines for economy-wide, systemic transformations of energy use and emissions mitigation. Whereas a Latin American country with superb wind and solar resources might chart a technologically feasible path to almost fully renewable power generation within a decade, an industrializing Southeast Asian country with weak solar potential might require investments in utility-scale nuclear power, as well as new natural gas generation and import facilities to achieve absolute emissions reductions from its current baseline. Affordability is the political precondition for most governments' net-zero and Paris commitments. They must resolve who pays for the energy transition premium (e.g., utilities, consumers, the government itself) to beat cheap coal. The Biden administration might avoid shutting the door to

16 "Asia EDGE – Enhancing Development and Growth through Energy," US Department of State, accessed December 26, 2020, https://www.state.gov/asia-edge; "Growth In the Americas," US Department of State, accessed December 26, 2020, https://www.state.gov/wp-content/uploads/2019/11/America-Crece-One-Pager-003-508.pdf; and "Joint Statement on the Japan-United States Strategic Energy Partnership (JUSEP)," US Department of State, September 30, 2020, https://www.state.gov/joint-statement-on-the-japan-united-states-strategic-energy-partnership-jusep/.

17 "What We Offer," US Development Finance Corporation, accessed December 28, 2020, https://www.dfc.gov/.

18 "The Biden Plan to Build Security and Prosperity in Partnership with the People of Central America," Biden for President, accessed December 28, 2020, https://joebiden.com/centralamerica/.

technical and financial assistance on any particular technology or fuel source if the requesting government can clearly demonstrate how it contributes to its overall emissions-mitigation strategy, particularly its most ambitious long-term mitigation goals. In recent years, for example, some major development institutions (most recently the European Investment Bank) have faced growing activist pressure to eliminate all financing options for any project related to fossil fuel infrastructure of any kind, leading to questions about the medium- and long-term prospects for developing countries to access funding for natural gas infrastructure.[19] While categorical exclusions may be tempting in their clarity and simplicity, the overall transition pathway for a given country (particularly some in Africa, Asia, and Eastern Europe where more polluting fuels continue to dominate the local energy supply) may be considerably more complicated and merit a more nuanced approach. The Biden administration, both in how it deploys domestic resources and how it leverages its influence with IFIs and multilateral development banks (MDBs), might support and model an outcomes-focused approach in its relationship to developing countries where there is strong interest in, and a compelling rationale for, utilizing more controversial technologies.

Relationships with Hydrocarbons Producers

Although nearly every country saw serious economic consequences from the global pandemic, the devastation was especially acute (and may prove more enduring) for the world's oil and gas producers in a year that saw nearly billions enter lockdowns and Brent crude oil prices sink below $20/barrel at their nadir.[20] One estimate projected that, in 2020, oil and gas exploration companies (many of which are state-owned entities and major contributors to public budgets) would see losses of as much as $1 trillion, with governments that rely on hydrocarbons revenues at especially heightened financial risk.[21]

The United States is itself a highly diversified producer, not reliant on oil and gas revenues or a state-owned production company; even so, these developments are very material to US foreign policy. Major producers span every continent, and many are US allies or nations in which the United States has core national security interests: Canada and Mexico are both major crude oil producers; to the south, Brazil and Colombia each have mature industries, while Argentina seeks to grow as a major natural gas producer, and possibly as a regional supplier; Venezuela, broken by the incompetent Nicolás Maduro government and now the impacts of US sanctions, will need its languishing oil industry to play a role in its broader recovery, while its neighbor Guyana may soon become one of the world's most prolific oil producers. In the Middle East, Iraq's future stability may depend heavily on its management of its native oil industry, while Iran and Saudi Arabia, with whom the United States has deeply complicated relationships, remain largely dependent on hydrocarbons to fund public spending and large bureaucracies. Resource-rich Africa hosts several long-standing major producers (e.g., Nigeria, Angola) and several emerging producers eager to leverage the industry for human and economic development gains (e.g., Senegal, Mozambique).

At the same time, these countries' governments are increasingly grappling with the realities of a world battling climate change, and what the incoming energy transition will mean for hydrocarbons producers the world over, if and when consumption of certain fuels (especially refined oil products) begins to shift or decline as a result of policy, societal, or technological adjustments to a rapidly warming world. For now, the major analytical outlooks suggest that the consumption of oil and natural gas will persist for decades into the future, with demand especially concentrated in industrializing, developing economies. The International Energy Agency (IEA) projected in its most recent World Energy Outlook baseline case that oil consumption will recover to pre-pandemic levels in 2023 with overall demand growth plateauing around 2030, suggesting still-high levels of oil consumption well into the medium-term outlook.[22] Even so, the more

19 "European Investment Bank Drops Fossil Fuel Funding," BBC News, November 14, 2019, https://www.bbc.com/news/business-50427873.

20 "Brent Crude Oil 1970–2020," Trading Economics, accessed December 28, 2020, https://tradingeconomics.com/commodity/brent-crude-oil.

21 Natasha Turak, "Oil and Gas Companies Set to Lose $1 Trillion in Revenues This Year," CNBC, April 30, 2020, https://www.cnbc.com/2020/04/30/coronavirus-creating-1-trillion-revenue-loss-for-oil-and-gas-companies.html.

22 "World Energy Outlook 2020," International Energy Agency, https://www.iea.org/reports/world-energy-outlook-2020.

aggressive outlooks point to the possibility of significant overall consumption declines (-1537 million tonnes of oil equivalent (Mtoe) in 2030 in the IEA NetZero by 2050 case compared to its base case) even in a world that still uses significant amounts of hydrocarbons, likely favoring the most efficient, low-cost producers.[23] For those countries that are largely dependent on the oil and gas industries for national income and broader sociopolitical stability, the future is alarmingly uncertain, and efforts to prepare (e.g., Saudi Arabia's "Vision 2030") are producing mixed results so far.

How the Biden administration manages its relations with these countries as it grasps the mantle of global climate leadership (with Biden himself famously promising a "transition away from the oil industry" in the final 2020 presidential debate) will, thus, be a tricky issue indeed.[24] The Biden administration might consider the following guideposts in its relationships with oil- and gas-producing countries.

★ **Incentivize the most efficient, lowest-emission oil and gas development, especially in middle- and low-income producers, as they transition.** Very few, if any, of the major producing countries will abandon their oil or gas industries within the next decade, especially if global demand for these products remains stable over the near and medium-term outlook. Even the Biden administration's most ambitious transition proposals (e.g., a ban on new federal lands development) has been estimated to impact just 1.6 million barrels per day (mbp/d) of the more than 12 million barrels of US oil production, suggesting that the United Stateds will itself remain a major producer for years, if not decades.[25] Because the United States is itself among the largest oil and gas producers in the world—with downward-trending January forecasts still projecting 7.4 mbp/d of oil production alone—the Biden administration cannot credibly demand the immediate curtailment of other countries' native and, in many cases, critically important industries.[26] It can, and should, model the policy and regulatory pathways to develop a highly regulated and highly efficient hydrocarbons industry, and bring along like-minded allies and partners (both in governments and in the private sector) in reducing waste and fugitive emissions. Venting and flaring of methane, a highly potent greenhouse gas that the Biden administration has promised to regulate tightly in the US industry, is an obvious starting point. The World Bank has estimated that total global flaring of gas, usually as a waste product from oil production, now equates to the entire gas consumption of Sub-Saharan Africa, with major and conflict-affected producers (the United States, Iran, Iraq, Venezuela) accounting for the greatest total flaring and recent increases.[27] As it prepares to more thoroughly regulate US industry on this front, the Biden administration can endorse a range of existing initiatives—including the Oil and Gas Methane Partnership and the World Bank Global Gas Flaring Reduction Partnership, among others—as well as work with producer allies like Norway, the United Kingdom (UK), and Canada where policies to maximize industry efficiency in preparation for a broader transition are being implemented. On the multilateral and bilateral levels, there will be ample opportunities to demonstrate the best possible models of production and facilitate the infrastructure and technological investments (e.g., satellite monitoring, takeaway capacity) that can rapidly lower methane waste.

23 Ibid.

24 Kathleen Ronayne and Ellen Knickmeyer, "Biden Calls for 'Transition' from Oil, GOP Sees Opening," Associated Press, October 23, 2020, https://apnews.com/article/election-2020-joe-biden-donald-trump-technology-climate-26908b855045d5ce7342fd01be8bcc10.

25 US oil production was estimated by the Energy Information Administration (EIA) at 12.8 mbpd for the first two months of 2020 pre-pandemic. S&P Analytics has projected that a total federal drilling ban would cut US oil output by 1.6 million b/d by 2025. Brandon Evans, "Commodities 2021: Biden Administration's Possible Ban on New Federal Leases Could Cut 3.7 Bcf/d by 2025," *S&P Global Platts*, December 28, 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/122820-commodities-2021-biden-administrations-possible-ban-on-new-federal-leases-could-cut-37-bcfd-by-2025.

26 Jordan Blum, "Total US Shale Production Projected to Fall in January as DUCs Decline: EIA," *S&P Global Platts*, December 14, 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/121420-total-us-shale-production-projected-to-fall-in-january-as-ducs-decline-eia.

27 "Global Gas Flaring Jumps to Levels Last Seen in 2009," World Bank, July 21, 2020, https://www.worldbank.org/en/news/press-release/2020/07/21/global-gas-flaring-jumps-to-levels-last-seen-in-2009.

An LNG tanker is seen at the Negishi LNG Terminal, which is jointly operated by Tokyo Gas and JERA, in Yokohama, Japan, in October 2019. *REUTERS/Yuka Obayashi*

★ **Model what a constructive role for today's oil and gas industry will look like within the long-term energy transition**. Several major international oil and gas companies have begun charting their long-term energy transition business strategies in the context of climate change and anticipated shifting patterns of oil and gas consumption, with some committing to eventual corporate net-zero emissions through the full lifecycle and end use of their products (also known as Scope 3 emissions). Similarly, some governments that have traditionally relied on their native hydrocarbons industries are also developing long-term strategies to further diversify and ensure a fair transition for workers in these industries (with the recently announced North Sea investment deal with the UK government, in exchange for transition commitments, the most recent example).[28] Indeed, experts see an enduring role for the existing oil and gas industries' knowledge base, skill sets, and technological capacities as facilitating global decarbonization. The IEA's recent report focused on this question, and argues that "industry can play a central role in helping to tackle emissions from some of the hardest-to-abate sectors," highlighting carbon capture, storage, and utilization (CCUS), low-carbon hydrogen, biofuels, and offshore wind.[29] The Biden administration should recognize these opportunities in its relationship with the US industry, which it can also leverage as a model for how the oil and gas industry can evolve its role going forward. A Biden administration might

28 Nick Coleman, "UK Government to Back 'Healthy' North Sea Investment, but Faster Transition," *S&P Global Platts,* December 14, 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/coal/121420-uk-government-to-back-healthy-north-sea-investment-but-faster-transition.

29 "The Oil and Gas Industry in Energy Transitions," International Energy Agency, January 20, 2020, 10, https://webstore.iea.org/download/direct/2935?fileName=The_Oil_and_Gas_Industry_in_Energy_Transitions.pdf.

also, particularly on a bilateral basis, advise producer governments interested in economic diversification on how they might prepare for the possibility of a long-term devaluation of their oil and gas assets, and how income in the present can be invested in the near term to hedge against future uncertainties in the commodities outlook.

A Role for US Natural Gas

Few energy resources have seen as dramatic a shift in analytical discourse about their role and long-term value as quickly as natural gas has over the last decade. Whereas the US shale boom of the early 2010s and advent of a new, low-cost natural gas supplier brought the "bridge fuel" narrative into preeminence, today there are mounting questions about the utility of natural gas in combating climate change, as well as outright backlash against the fuel (notably, in some US cities that have recently banned its use) and buildout of new natural gas infrastructure. Indeed, questions about the future role of US natural gas production, transport, and now export industries was among the most challenging issues for the Biden campaign to navigate. The Democratic Party's progressive wing exerted considerable pressure on the Biden team to toughen his position on existing and future US natural gas production. That group and its international counterparts are alarmed by projections that global natural gas demand will grow 14 percent by 2030 in baseline forecasts, and that developing countries accelerating their gas infrastructure investments (such as liquefied natural gas (LNG) import facilities) may be locking carbon-emitting fossil fuels into their energy systems when, in their view, the world should pursue deep decarbonization as quickly as possible.[30] Not only did the more progressive Bernie Sanders campaign propose to ban hydraulic fracturing in the United States (a proposal that Biden disavowed repeatedly), but it also proposed to ban the export of fossil fuels altogether as a means to discourage overseas reliance on hydrocarbons.[31] The very real tensions surrounding the use and export of natural gas will not dissipate, certainly not within the Democratic Party, anytime soon.

The Biden administration will, therefore, need to clearly articulate the role of US natural gas in the world within its broader climate agenda. In the authors' view, that role should primarily involve a domestic and an international component.

★ **Require that future US natural gas development and infrastructure approvals quantifiably fit into the US decarbonization strategy.** The Biden administration has promised that it will not only put the US economy on the path to net-zero emissions by 2050, but also that it will pursue carbon-pollution-free power generation by 2035. New approvals for natural gas infrastructure, for example, should be clearly demonstrated as accelerating and facilitating the US net-zero pathway, not undermining it, a case that may vary region to region and project to project. Notably, as the United States continues to phase down coal-fired generation and a growing number of states pursue high percentages of renewable power penetration, there is a compelling technical case for natural gas generation to have a crucial facilitating role in ensuring steady, reliable power access. A recent Energy Futures Initiative and Environmental Economics, Inc. study on the New England region noted that natural gas power assets can provide "firm generating capacity" to enable that region to meet its net-zero economy targets.[32] A new policy and regulatory approach that requires that federally approved projects fit within the broader, national decarbonization strategy may result in new requirements (e.g., calculable emissions offsets, verifiable reductions in or elimination of upstream methane emissions, and mitigating environmental and health impacts on marginalized communities) for producers and

30 "World Energy Outlook 2020," International Energy Agency, https://www.iea.org/reports/world-energy-outlook-2020.

31 "The Green New Deal," Sanders for President, accessed December 29, 2020, https://berniesanders.com/issues/green-new-deal/.

32 "Net-Zero New England: Ensuring Electric Reliability in a Low-Carbon Future," Energy Futures Initiative & Energy and Environmental Economics, Inc. (E3), November 2020, 3, https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5fd2997d26324029a116f9b4/1607637387632/E3+EFI_Report+New+England+Reliability+Under+Deep+Decarbonization_Full+Report_November_2020.pdf.

project developers. Clarity in the requirements, to whom they apply within the natural gas value chain, and the capacity and resources (e.g., full staffing of oversight agencies, access to and deployment of monitoring technologies) to enforce them will be key to addressing the legitimate concerns surrounding the future of the US natural gas industry as the United States moves toward a national net-zero goal.

★ **Consider creating a voluntary methane reduction program to incentivize US industry improvements in tandem with new regulation.** A positive role for US natural gas depends heavily on cleaning up US industry performance at home—especially on methane emissions. One way the administration might constructively engage US industry is by developing a new EPA-managed voluntary Methane Star program (akin to Energy Star for efficiency measures), which would validate upstream, midstream, and downstream producers' emissions metrics, if they measure and disclose their emissions though methodologies suggested by or accepted by EPA and reduce them to acceptable levels. While project applicants might find other ways to demonstrate that their requests for new infrastructure are harmonious with the Biden administration's stated net-zero commitment, the Council for Environmental Quality (CEQ) might, through guidance, deem that applicants who are compliant with the Methane Star program meet that test immediately. This pathway might be created in parallel with additional or new regulation, but it would be a faster process and could challenge industry to pilot creative methane reduction strategies and demonstrate their efficacy (possibly helpful to overseas producers struggling with the same problems). Such a program would also help industry create internationally credible and competitive certification of the carbon footprint of its products.

★ **Acknowledge a role for US natural gas supplies and affirm the reliability of US LNG exports in countries where access to natural gas can have verifiable climatic, environmental, energy security, economic growth or public health benefits.** The emergence of the United States as a competitive and low-cost LNG supplier has already had major positive implications for gas consumers in Europe and East Asia, regions that were previously reliant on limited, or often high-cost, suppliers—including coercive suppliers in some regions and inflexible contract models. Given today's globalized, more liquid market, many countries see a significant role for natural gas supplies not only in meeting their respective climate targets, but also in addressing energy poverty, economic development, and public health priorities. South Korea, having announced a net-zero-emissions pledge in October 2020, plans to convert 12.7 gigawatts (GW) of existing coal-fired generation to run on natural gas from LNG imports, and has begun seasonal replacements of operating coal fleets with LNG to improve local air quality during the winter.[33] In Eastern Europe, eight countries that still heavily rely on coal (Bulgaria, Czech Republic, Greece, Hungary, Lithuania, Poland, Romania, and Slovakia) recently asserted to the EU that access to natural gas "provides the fastest and the most affordable intermediate path to a less carbon-intensive economy…and allows for gradual and effective contribution to EU's climate neutrality by 2050."[34] Seeking a rapid wind-down of the US industry, or outright forbidding future export-license approvals, may produce unintended consequences damaging to both allies and broader climatic goals. At the same time, the Biden administration might incentivize the US LNG industry to be "best in class" compared with its peers overseas, operating with maximum energy efficiency and the lowest possible emissions profile (e.g., using renewable power in liquefaction processes where possible, utilizing carbon capture throughout the value chain, or setting efficiency requirements for upstream suppliers). Conditioning future license or adjacent infrastructure approvals on meeting this higher bar would send a clear signal about expectations to

33 Evelyn Lee and Jake Horslen, "S Korea to Convert Half of Existing Coal Fleet to Gas," Argus Media, May 11, 2020, https://www.argusmedia.com/en/news/2104174-s-korea-to-convert-half-of-existing-coal-fleet-to-gas; Charles Lee, "S Korea to Shut Up to 16 Coal-Fired Power Plants for December-February," *S&P Global Platts*, November 26, 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/coal/112620-s-korea-to-shut-up-to-16-coal-fired-power-plants-for-december-february.

34 Frédéric Simon, "Eight EU States Back 'Natural Gas' in Net-Zero Transition," *Euractiv*, May 22, 2020, https://www.euractiv.com/section/energy-environment/news/exclusive-eight-eu-states-back-natural-gas-in-net-zero-transition/.

the US industry, while communicating to consumers overseas that the United States is not only a competitive supplier, but also a superior one. The Biden administration might also consider reaffirming the United States' reliability as a global supplier through a declaratory policy that exports under existing licenses will continue without interruption.

Access to Critical Technologies

A vast suite of new, emerging, and yet-undeveloped technologies will be necessary to facilitate both the US and global energy transitions, particularly in the post-2030 period when the world will (hopefully) see substantial and scalable progress toward deep decarbonization in the more challenging sectors of the economy (e.g., industrial activity). A flagship IEA report warns that energy efficiency and rapid scaling of renewable power alone are necessary but insufficient technologies, arguing that "[w]ithout a major acceleration in clean energy innovation, net-zero emissions targets will not be achievable…The key technologies the energy sector needs to reach net-zero emissions are known today, but not all of them are ready."[35] IEA estimates that more than one third of the cumulative carbon dioxide emissions reductions necessary to global net-zero emissions will come from technologies only in the prototype or development stages, while a further 40 percent will come from technologies not yet commercially scaled.[36] The IEA casts the challenge as an opportunity, with investment potential in prototype or development-stage transition technologies averaging $350 billion a year over the next twenty years, insulating 750,000 jobs in the energy innovation sector.[37]

The Biden campaign clearly agreed; energy innovation was at the core of the $2 trillion accelerated investment proposed in the Build Back Better plan, promising to "[d]rive dramatic cost reductions in critical clean energy technologies, including battery storage, negative emissions technologies, the next generation of building materials, renewable hydrogen, and advanced nuclear—and rapidly commercialize them, ensuring that those new technologies are made in America."[38]

However, the innovation agenda, essential though it may be, may run up against some inherent tensions both in the Biden administration's political goals and in the wider trade and geopolitical environment of the post-pandemic world. The Biden campaign, first in its original climate plan and more pointedly in the Build Back Better plan, ran on a vision of the energy transition as a boon to US businesses and US workers, with special emphasis on unionized labor as well as locally produced, domestic content. Importantly, the campaign's stance on environmental justice—particularly spreading the benefits of new employment through the transition and innovation agenda to marginalized communities—was a major component of the overall vision. The Biden administration, having fought to win back blue-collar workers to the Democratic Party, may ultimately craft its own version of "America First" in how it executes this vision, but adding a green tint.

Many of the same political trends are apparent elsewhere: China, exhausted from a three-year trade war with the Trump administration, has asserted "Made In China" as its guidepost to decouple critical supply chains (particularly with the United States) and produce high-value technological products at home, rather than depend on possibly hostile suppliers. Globally, it is probable that the fallout from the COVID-19 pandemic will have accelerated isolationist trends in the global trade and investment outlook, with one recent analysis noting "governments have been undertaking diverse strategies, initially targeting increased self-sufficiency in strategic products, but aiming more broadly to raise the overall domestic share of manufacturing" in processes of "localization" or "regionalization."[39] None of these developments are conducive to generating the scale of energy research and development necessary to meet the innovation challenge or facilitate cross-border information and technology sharing, joint ventures,

35 "Clean Energy Innovation," International Energy Agency, July 2020, https://www.iea.org/reports/clean-energy-innovation.

36 Ibid.

37 Ibid.

38 "The Biden Plan to Build a Modern, Sustainable Infrastructure and an Equitable Clean Energy Future," Biden for President, accessed December 30, 2020, https://joebiden.com/clean-energy/.

39 David Ramirez, "COVID-19: Global Trade and Supply Chains after the Pandemic," International Institute for Strategic Studies, August 27, 2020, https://www.iiss.org/blogs/research-paper/2020/08/covid-19-trade-and-supply-chains.

and foreign investments needed to commercialize critical technologies.

The Biden administration will need to reconcile its domestic political and economic agenda with the reality that no one country—superpower or not—can meet the scale of the innovation challenge on its own to make a global net-zero nearly feasible. To facilitate a broad-based, multilateral collaboration on combatting climate change in the innovation sector, the incoming administration might take the following steps.

★ **Develop a comprehensive, multilateral strategy to ensure a stable, sustainable critical minerals supply.** One of the most serious potential barriers to a global energy transition is unreliable critical minerals supply chains. Lithium, copper, cobalt, and nickel are among dozens of minerals that are essential to battery storage, electric vehicles, renewable power generation and electrification infrastructure. The IEA recently argued that, even as demand for these critical minerals grows rapidly on the back of demand for these low-emission technologies, so too have risks grown around the security of their supply chains (vividly shown in the pandemic crisis as some major suppliers, like Peru, temporarily shuttered mining operations), mounting concerns over skewed supply concentrations in certain regions, and the safety and sustainability of some mining operations (e.g., "artisanal mining" in the Democratic Republic of the Congo).[40] The Trump administration has taken initial, if imperfect, steps toward such a strategy with the Executive Order on Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries, which mandated that the Secretary of the Interior produce a report highlighting the United States' unique critical minerals supply vulnerabilities, prioritize the development of domestic supply chains, and recommend actions (such as tariffs and quotas) to amend dangerous imbalances.[41] A Biden administration might build on this approach, but with greater emphasis on multilateralism and positive incentives to fully understand where the key supply vulnerabilities are and assess the full suite of options (e.g., minerals recycling, synthetic replacements) that the United States and allies have to reduce those vulnerabilities. Simply endorsing more mining in more places, for example, may not be the best possible outcome, given the Biden administration's commitments on environmental and social justice.

★ **Treat climate-focused technological innovation as "America Leads" instead of "America First."** An environment conducive to meeting the innovation challenge must be one that is defined by robust, stable trade and investment partnerships among likeminded and committed partners in both the private and public sectors. The Biden administration has adopted "Made In America" among its core mantras; undoubtedly, there is enormous opportunity in energy innovation for US workers, especially given the leadership of US academic institutions and the national laboratories already revolutionizing areas like advanced and small-scale nuclear power. However, the necessary scale of low-carbon innovation cannot progress in a vacuum, and certainly not at the pace and financing levels needed to put the world on track for net-zero emissions. The Biden trade agenda, which has already promised to put climate priorities and verifiable emissions reductions at the core of any future trade agreements, might also consider how the innovation agenda can not only be a component of, but perhaps feature in, future trade negotiations (e.g., cross-border trade and investment agreements on climate-focused technologies, differentiated rules governing technology sharing and investment oversight easing international collaboration for climate-critical sectors, facilitating joint ventures or agreements among private businesses, unions, academic, and nonprofit organizations in different regions and countries working to scale emerging technologies, intergovernmental, or multilateral memoranda of understanding as addendums to future trade agreements). Clearly, such an approach cannot be one-size-fits-all,

40 "Clean Energy Progress after the Covid-19 Crisis Will Need Reliable Supplies of Critical Minerals," International Energy Agency, May 6, 2020, https://www.iea.org/articles/clean-energy-progress-after-the-covid-19-crisis-will-need-reliable-supplies-of-critical-minerals.

41 "Executive Order on Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries," White House, September 30, 2020, https://www.whitehouse.gov/presidential-actions/executive-order-addressing-threat-domestic-supply-chain-reliance-critical-minerals-foreign-adversaries/.

particularly where complex geopolitical relationships, as with China, are concerned. But, as the Biden administration considers how to move forward from the Trump-era trade conflicts in a constructive manner, the innovation agenda is a promising value-add opportunity.

Conclusion: Striking the Balance

Clearly, the incoming Biden administration must manage a careful balancing act as it moves forward with asserting its domestic and international climate strategy. By choosing wisely, the new administration can engage a wide range of important stakeholders, from US workers to the private sector to the energy industries, in the national and global decarbonization effort without undermining its domestic policy goals or weakening its potential outreach to other governments with a range of interests and concerns around the global transition. A flexible approach will ultimately build a better, broader and more effective coalition in the fight against global climate change. None of the tensions or potential areas of conflict described here can be quickly or easily resolved, and this analysis itself is not an exhaustive list of all possible difficult choices with which the Biden team will soon be confronted. Acknowledging that reality, the new administration appears to have a constructive and thoughtful overarching mindset as it steps up to these challenges: leading at home will enable the United States to lead abroad. Although the Biden administration faces significant political limitations and hard choices as it considers its priorities with control of Congress, it can—through executive action, a robust regulatory slate, effective leverage of the bureaucratic process, and possibly a significant legislative effort—still signal a firm US commitment in the global fight against climate change. It will be vitally important for the Biden administration to reset US international leadership on this multi-generational crisis; fortunately, the early signs from the transition demonstrate clarity and determination on the task ahead.

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