Atlantic Council

Building for tomorrow: Preparing US industry to compete in a lower-carbon global economy

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The Atlantic Council Global Energy Center develops and promotes pragmatic and nonpartisan policy solutions designed to advance global energy security, enhance economic opportunity, and accelerate pathways to net-zero emissions.

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A steel worker makes a component for a new train. REUTERS/Kamil Krzaczynski

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Table of contents

Executive summary

Global demand for infrastructure and industrial products and services is set to accelerate throughout the world. An effective domestic industrial policy that incentivizes durable competitiveness can enable the US industrial base to meet this moment and build on its existing comparative advantages in efficiency and sustainability. Long-term sustainability, particularly in terms of greenhouse gas emissions-intensity, is a growing consideration in the global conversation on industrial production and trade of these critical products. In this context, US industry can benefit now and for decades to come from policies highlighting the current attributes in these areas while also promoting clarity, accountability, and consistent improvements over time.

Throughout the last year, the Atlantic Council engaged with industrial-sector stakeholders, particularly those in the US Gulf Coast region, to assess the opportunity for promoting competitiveness in key industries including steel and aluminum, chemicals, cement, hydrogen, and more. These stakeholders, participating in multiple interviews and gathering at two workshop-style convenings, offered candid assessments of the present challenges for sustainability and durable competitiveness in US industry as well as how these barriers might be overcome to present current and improved sustainability as a competitive advantage. Broadly, there is a strong sense that the US policy approach toward industrial sustainability needs to shift gears: a new competitive approach that moves past calcified, ideologically driven perspectives on issues like preferred energy transition pathways, accepts industrial policy as a key factor supporting American power projection, and affirms the central role of US alliances and economic partnerships.

Four major themes coalesced into core recommendations from this study, intended to represent politically achievable and immediate opportunities to move this conversation forward.

First, the US Congress must pass comprehensive permitting reforms to address extant, intractable difficulties in the federal permitting system and are forward-looking to better meet the challenges of an expanding power grid and new demands on US infrastructure from a growing artificial intelligence industry.

Second, Congress and the federal government must protect existing incentives for clean and sustainable industry and manufacturing, particularly legislation like the Inflation Reduction Act (IRA), which has vast implications for domestic and foreign investment in many emerging industries. Ceding this fertile ground to geostrategic competitors could undermine US vital interests—though adjustments in how such incentives are offered could be constructive in specific circumstances.

Third, the legislative and executive branches should urgently consider passage of industrial emissions analysis legislation, namely the 2024 bipartisan-supported legislation dubbed the PROVE IT Act, and lay the groundwork for development of a US border adjustment system. US industry already enjoys significant advantages over competitors in terms of its emissions profiles and sustainability, but the available data is sometimes limited or incomplete from sector to sector. In addition to resolving this data gap, policymakers should consider how US advantages can be protected with measures (such as a foreign pollution fee) that would insulate US producers from unfair, higher-intensity competition and also encourage producers elsewhere to improve their own processes and reduce their emissions impacts.

Finally, policymakers should work with and alongside private-sector industrial stakeholders to develop a fit for purpose, modern emissions accounting system that provides detail and granularity. A credible system should enable comparisons among producers of given industrial goods and services. A “gold standard” accounting framework for each major industrial sector could be road-tested against real world conditions and the existing information environment, and provide opportunities for voluntary participation from companies and stakeholders within a given industrial sector. Progress on this front might ultimately enable product-level (unit by unit) accounting which could later inform emissions intensity standards and create a more even playing field among producers.

None of these recommendations represent a silver bullet; likewise, developing a durable, competitive US industrial base will be the work of many years and generations of policymakers. Even so, the United States cannot risk finding itself stranded in the past as antiquated debates hold back important progress and diminish its competitive edge. Forward momentum is possible, but it starts with a clear vision and focus on the opportunity ahead.

I. Introduction

The importance of an effective industrial strategy is increasingly evident throughout the world amid wider changes in technology and domestic and international politics. In response, US policymakers are focused on how industry in the United States might remain competitive in a new geopolitical era defined by profound change and deep uncertainty. These changes include industrial processes electrifying and digitalizing, hyperscaling of artificial intelligence and data processes, and the exponential rise in demand for energy and new energy infrastructure. Consequently, a driving question has emerged for national industrial strategy: how to ensure energy affordability, reliability, and resilience in the face of rising nationalism, protectionism, and geopolitical conflict.

For the major US industrial sectors, such as steel, aluminum, cement, and chemicals (all of which compete for global market share), successful competition requires two key attributes: an ability to access the markets of major economies that increasingly seek low-emissions products, and to combat the unfair trade practices of countries like China that use state capital and low environmental standards to underprice them, scale supply, and flood markets with their own versions. A pathway to success, a US industry with competitiveness that will be durable over time, requires both supportive government policy and a market with transparent and credible data that gives due credit to producers implementing higher business standards than their competitors.

The question for the United States is not whether to compete in a world that accounts for the sustainability of major industrial products but how. At the same time, industrial policy as a national objective is now a bipartisan norm, even though the style of implementation may vary widely among administrations. Given its fiscal constraints, the United States faces the additional question of how to use national policy to ensure our industries are competitive overseas without drawing on additional forms of government subsidies or incentive structures. In a world where US adversaries regularly use their control of commodities or industrial products as a tool of political leverage, effective industrial competition is no longer just a question of economic statecraft and trade policy but a national security and geostrategic imperative. From a corporate perspective, however, it also is an opportunity. US industries already operate under higher environmental and emissions standards than many foreign competitors. Assuring market access favors, rather than discriminates against, rising standards is a platform for growing the US industrial and manufacturing base—one that helps level the playing field by addressing more lax standards and unfair advantages in competitor economies.

Throughout the last year, the Atlantic Council engaged with several dozen industrial stakeholders to assess the opportunity for promoting competitiveness in key industries amid a wider decarbonization trajectory. This study has sought to better understand the building blocks of a more sustainable US industrial base fit for purpose in a changing world, and how existing US advantages in efficient industry might be leveraged as a competitive advantage. These stakeholders spanned the private, public, and nonprofit sectors including multinational companies, major investors focused on these industries, current and former federal and state officials, and academia, think tanks and other institutions. Across this diverse range of voices, a core conclusion emerged: that the United States is uniquely equipped to lead in the pursuit of durable competitiveness in this new era.

That outcome is far from assured, however. The promise of durable competitiveness is both a challenge and an opportunity to prepare the US industrial base for the next decade and thereafter. An increasingly sustainable industrial base can become a competitive advantage with an optimized framework of support and firm commitment across the US government, as well as international policies that recognize and reward these attributes. The previous analysis in this study identified multiple barriers which have prevented, or failed to incentivize, the breadth and depth of change needed in US industries to achieve this opportunity.[1] This analysis, which concludes this study, looks ahead to what can realistically be done in the near term to support these aims. A revitalized competitive approach calling for a gear shift in traditional thinking about industrial decarbonization provides a necessary foundation for specific policy recommendations, which follow.

1. David L. Goldwyn and Andrea Clabough, "Reducing US Industrial Emissions Under Budgetary Uncertainty," Atlantic Council, November 4, 2024, https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/reducing-us-industrial-emissions-under-budgetary-uncertainty/.

II. A new competitive approach

For the last several years, the conversation around how and whether to decarbonize industrial processes—much like that of the wider energy transition discourse—has been calcified into a "versus" mentality. Some proponents have framed this as a moral imperative to mitigate the adverse effects of climate change, while others have opposed the concept as an avoidable cost and burden on US industry. This has been especially problematic in the US context where the conversation has been welded onto long-standing ideological and political fault lines, but its implications are global in scale. The opposing narrative might be simplified (albeit imperfectly) that decarbonization is inimical to industrial competitiveness and innovation alike. Sustainable industry, in this worldview, implies less industry, perhaps even degrowth.[2]

But US industries, with the long-term vision necessary to sustain multidecadal investments, have no choice but to be more pragmatic. There is a growing focus both on the epochal opportunity—a world soon to host nine billion people, with demand for new infrastructure, goods, and services fast accelerating alongside climate change—and the need to find efficient strategies to enable industrial decarbonization in a way that provides them with a level playing field with overseas competitors and time to adjust.[3] Such efforts have been underway within the private sector for years. Notable examples include the International Maritime Organization's development of emissions and efficiency targets alongside its member countries, internal efforts within the liquefied natural gas (LNG) industry to certify the emissions impacts of LNG cargoes with third-party assessments, and a growing number of sustainability-minded business organizations (such as the Clean Energy Buyers Association).[4] For industry, therefore, a polarized and politicized "versus" mentality is not only unhelpful, it is outright unsuitable to preparing for their businesses for long-term viability.

Within this conversation, US industry will be better served by policymakers with a gear shift—a new approach which moves the discourse away from ideological preference and toward practical, and actionable solutions that serve common goals. A revised framework should invite creative policymaking, encourage innovation, and be accessible to any political leadership that might take advantage of it. Three principles should provide the cornerstones of a new competitive approach for US industry.

1. Industrial policy and competitiveness are intrinsic to national security and power projection.

The United States must treat industrial policy—and competitiveness—as intrinsic to national security and long-term power projection. It is now undeniable that industrial policy, or targeted government support to bolster core economic sectors, is more than just a trend: Multiple US presidential administrations of wildly different political orientations have pursued versions of this strategy. To be sure, its implications are often in the eye of the beholder: Within the last decade of federal governance alone, industrial policy has included tariff regimes targeting overseas competitors in industries like steel and aluminum, but also historic multibillion dollar investments in aging infrastructure and loan guarantees for new manufacturing facilities (to say nothing of industrial policy variations existing and emerging in many major economies the world over).

Important debates will no doubt be had over the "hows" of industrial policy—but "why" is increasingly self-evident. The future is literally under construction: Estimates suggest that $3.9 trillion in annual global infrastructure investment is needed to support essential services for a fast-growing and urbanizing world.[5] Not surprisingly, global energy investment was set to surpass $3 trillion for the first time in 2024; $2 trillion of that historic total was dedicated to clean energy technologies and infrastructure.[6] Yet despite these staggering numbers, there

2. Degrowth, in this context, refers to negative economic growth and reversing trends of growing consumption and consumerism (especially in developed economies). Specific definitions and implications associated with degrowth vary. The practical aspects of implementing degrowth, socially or politically, are also a source of debate. See also: Victoria Masterson, "Degrowth—What's Behind the Economic Theory and why Does It Matter Right Now?" World Economic Forum, June 15, 2022, https://www.weforum.org/stories/2022/06/what-is-degrowth-economics-climate-change/.
3. "Global Issues: Population," United Nations, accessed March 9, 2025, https://www.un.org/en/global-issues/population.
4. "IMO's work to cut GHG emissions from ships," International Maritime Organization, last accessed May 7, 2025, https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx; Jessica Casey, "Commonwealth LNG and Kimmeridge Texas Gas commit to natural gas certification under MiQ standards," LNG Industry, November 1, 2024, https://www.lngindustry.com/liquid-natural-gas/01112024/commonwealth-lng-and-kimmeridge-texas-gas-commit-to-natural-gas-certification-under-miq-standards/.
5. Yvonne Welsh and Clara Cutajar, "Developments in Financing," Part Two of Four in *Global Infrastructure Trends series*, PricewaterhouseCoopers International Limited (PwC), accessed March 16, 2025, https://www.pwc.com/gx/en/industries/capital-projects-infrastructure/publications/infrastructure-trends/global-infrastructure-trends-financing.html.
6. International Energy Agency, *World Energy Investment 2024*, June 2024, https://www.iea.org/reports/world-energy-investment-2024.

A petroleum refinery in Washington state. REUTERS/David Ryder

remains an alarming infrastructure financing gap that could reach $15 trillion by 2040.[7] The US economy is no exception and no less vulnerable: The American Society of Civil Engineers (ASCE) recently projected that nearly $7.4 trillion is needed in US infrastructure investment through 2033, which can support up to $5 trillion in gross US output and over $240 billion in US exports by 2043.[8] This prosperity turns on maintaining the recent major infrastructure and energy investments enabled by the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). But that same analysis warns that the alternative scenario in which these laws are severely undercut could instead result in manufacturing-sector losses of $1.15 trillion by the mid-2030s.

The United States and the world need more of everything: more metals, more electricity, more fuels, more minerals, more raw materials, more chips, and more batteries. Industrial policy, which is fundamentally concerned with how we make more of all these things, is thus as much a national security strategy as it is an economic one. To consistently invest and incentivize growth in both mature and emerging industrial sectors is to put a thumb on the scale: ensuring that the United States can and will play a central role in building the world that is decades ahead of us—which today requires laying its foundations. US leadership can actively shape that future for the better. However, its own leaders must agree that the core principles of industrial policy and the discipline it requires are not up for debate.

2. Conventional energy and emerging sources are both crucial for long-term sustainability.

It is time to acknowledge that energy supply—from both conventional and emerging sources—and long-term sustainability go hand in hand. The last few years have brought reconsideration to multiple narratives surrounding the global energy system and the prospect of an energy

7. Amin Mohseni-Cheraghlou and Naomi Aladekoba, "The Global Infrastructure Financing Gap: Where Sovereign Wealth Funds and Pension Funds Can Play a Role," Atlantic Council, October 31, 2022, https://www.atlanticcouncil.org/blogs/econographics/the-global-infrastructure-financing-gap-where-sovereign-wealth-funds-swfs-and-pension-funds-can-come-in/.
8. American Society of Civil Engineers (ASCE), *Bridging the Gap: Economic Impacts of National Infrastructure Investment*, 2024–2043," May 2024, https://bridgingthegap.infrastructurereportcard.org/; and "Continued Federal Infrastructure Investments Will Save Jobs and Grow the Economy over the Next Decade: Economic Study," Press Release, ASCE, May 13, 2024, https://www.asce.org/publications-and-news/civil-engineering-source/society-news/article/2024/05/13/asce-releases-newest-economic-study.

transition. Examples abound and are not isolated to one singular perspective or worldview. With respect to industrial competitiveness, a critical lesson has been that no single fuel, or category of fuel, is suitable to meet wide-ranging and diverse economic needs over the decades of change ahead.

From the Industrial Revolution through to the present day, fossil fuels have overwhelmingly powered the major industrial sectors in advanced and developing economies alike. Recent years have seen a maturing of unconventional energy technologies, primarily those renewable and low- or zero-emissions options which have transformed the cost and sustainability of new power generation. But as our initial analysis argued, the pathway to reducing emissions and pollution in the industrial sectors will be a unique story with vastly different opportunities, challenges, and trajectories of change.

Realistically, US industrial sectors will rely on various types of fossil fuels, especially domestically abundant natural gas, over the near- and medium-term outlooks. At the same time, for the United States to assure its competitiveness, it is imperative to improve efficiency, encourage the deployment of new fuels and production models that maximize sustainability wherever possible, and commit to deploying negative emissions technology suites that can lengthen the runway for effective, low-emissions industrial fuels to fully mature. Low-emissions intensity industrial products are fast-becoming an issue of competitiveness.[9] This development is most obviously heralded by the incoming European Union's carbon border adjustment mechanism (CBAM) that has spurred a domino effect of adjustments and comparable programs throughout the world.[10] In this context, lingering arguments over which fuels are sort of bridge to a future scenario are increasingly antiquated. "All of the above" is often leveraged as a slogan, but it is a shared reality. Acknowledging it as such promises a strengthened and diversified energy supply, enhanced security, economic growth in new sectors, and an opportunity to reduce immediate and long-term global emissions.

This brand of forward-looking realism is already leading to change. Chinese industrial energy policies offer a recent illustration. A key aspect of China's energy-security strategy has been reducing reliance on expensive imported fossil fuels. This includes the electrification of industrial sectors which have traditionally relied on imports to complement domestic energy resources like coal. The International Energy Agency's Electricity 2025 report notes that Chinese policies have encouraged "replacement of fossil fuel-based heating for certain processes with electric heating in some industries such as chemicals and refineries," particularly with heat pumps among other technologies.[11] Fossil energy remains predominant throughout the Chinese economy—but the pathway, inclusive of both environmental and energy security benefits, is clearly laid. A similar example comes from the investment strategies evident in Gulf Cooperation Council countries (GCC). Though the GCC economies have long been defined by profits in the oil and gas sectors, their governments have nevertheless adopted forward-looking national development frameworks like Saudi Arabia's Vision 2030 and the United Arab Emirates Energy Strategy 2050. These plans prioritize low- and zero-carbon energy and transportation infrastructure, among other technology-focused investments, by leveraging their highly-capitalized sovereign wealth funds.[12] The United States can craft its own win-win scenario suitable to its goals—including maintaining and expanding its edge in industrial sustainability.

3. The United States' overseas partners are assets, not adversaries.

Building a modernized, sustainable industrial sector is a complicated puzzle of managing risks while maximizing benefits—and a puzzle is rarely solved alone. The notion that multilateralism enables industrial competitiveness may initially seem contradictory, but the diplomatic churning which ensued in the wake of the IRA's August 2022 passage appears to confirm this perspective.[13] Indeed, it could be reasonably asserted that trade actions overseas—especially the imminent EU CBAM—are the most immediate drivers of industrial

9. Emissions intensity specifically refers to the emissions associated with the complete production of a given item or product as a portion of the total emissions output (in absolute terms) of a facility, business, or company. Thus, as a facility produces more of a given item (such as a ton of steel) its total emissions may rise, but its emissions intensity (the emissions produced for each ton of steel output) might be reduced over time. See also: Pankaj Tanwar, "Carbon Emissions Intensity Explained," Carbon Better, April 26, 2024, https://carbonbetter.com/story/carbon-emissions-intensity/.
10. For a recent analysis of the rapid growth of border adjustment-style policies and regulations, see "International Emissions Trading Association (IETA), "International Reaction to the EU Carbon Border Adjustment Mechanism," April 2024, https://ieta.b-cdn.net/wp-content/uploads/2024/04/IETA_INTL-REACTION-TO-CBAM-REPORT.pdf
11. International Energy Agency, *Electricity 2025: Analysis and Forecast to 2027*, February 2025, https://www.iea.org/reports/electricity-2025.
12. Adriana Alvarado, "The Gulf Sovereign Wealth Funds: Accumulating Wealth and Investing Actively to Support Their Economic Goals," Morningstar, September 21, 2023, https://dbrs.morningstar.com/research/420844/the-gulf-sovereign-wealth-funds-accumulating-wealth-and-investing-actively-to-support-their-economic-goals.
13. Reuters Staff, "Explainer: Why the U.S. Inflation Reduction Act Has Rattled Europe," Reuters, February 1, 2023, https://www.reuters.com/markets/why-us-inflation-reduction-act-has-rattled-europe-2023-02-01/.

sustainability as a competitiveness consideration elsewhere, including the United States.[14]

But US leadership has never meant US isolation, and this discourse is no exception. Most obviously, industrial growth, especially economies of scale for new products and services, demands a robust system of trade. This is especially important given that highly efficient and low-emissions industrial products (such as steel) are likely to come with a "green premium" at the outset.[15] Markets of scale and potential buyers, both domestically and overseas, will be key to reducing costs and spurring innovations which bring these products into cost comparability with conventional ones. "Green" or low-emissions steel offers an example: In the first half of 2024, the Chinese government approved over seven million tons of new clean, scrap-based steelmaking capacity to target the European market and its incoming carbon border adjustment.[16] With an early lead on capacity and concerted government support, Chinese green steel producers will already enjoy an advantage in this market as their production and expertise increases. A fractured trade relationship with the EU, and other potential markets, thus risks leaving US steel locked out of an emerging line of business and playing an endless game of catch up. Likewise, the process of creating sustainable products will require international trade of components and inputs across borders, much the same as is already true for their conventional counterparts. Partnerships which facilitate the growth of supply chains foundational to sustainable industry—especially those supply chains outside the fast-expanding reach of Chinese influence and ownership—therefore represent an asset. A world with competing suppliers is one which enables resilient and reliable supply networks.

On an even more practical level, the major investors and project developers in the industrial sectors include some of the largest multinational companies in the world. These stakeholders may or may not be headquartered within the United States, but their value chains are spread throughout the global economy—to say nothing of their actual customers. As a result, there is a careful balancing act between policies that even the playing field for sustainable industrial products and services while avoiding those that discourage trade, undermine economic partnerships, and create inflationary pressure for companies with complex global operations. Resolving this challenge will likely take different forms in different industries, but the overarching value of retaining and leveraging international partners remains.

14. Tax and Customs Union, "Carbon Border Adjustment Mechanism," European Commission, February 26, 2025, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.
15. The green premium refers to the extra cost associated with a product or fuel created through primarily clean technology or low-emissions processes over a conventional process which emits more greenhouse gases.
16. Reuters Staff, "China Accelerates Green Steel Shift as EU Levies Loom, Researchers Say," Reuters, July 11, 2024, https://www.reuters.com/sustainability/climate-energy/china-accelerates-green-steel-shift-eu-levies-loom-researchers-say-2024-07-11/.

III. Recommendations

With this approach in mind, the recommendations below are intended to be sequential. Each category of policies or actions represents a natural progression, potentially achievable within a near- to medium-term timeframe. Accordingly, the first recommendations are intended to inform immediate policy discussions. The latter presume some level of implementation achieved in the earlier prescriptions and inform policies that might be considered in years to come.

Each of these recommendations represent one or multiple consistent themes expressed in our discussions with the industrial stakeholders who will be most impacted by their implementation. While we do not claim that each suggestion has the unanimous support of every representative involved in this study, those included here were endorsed by (or acceptable to) a critical majority of discussants representing various industries.

1. Congress should pass a technology-neutral permitting reform law and update existing laws as appropriate.

The proverbial Achilles' heel of the current US energy system is long-delayed comprehensive permitting reforms, which has precluded taking full advantage of both conventional and emerging resources and left that system too sclerotic for the twenty-first century. This is true despite some piecemeal legislative and regulatory fixes attempting to improve outcomes for major projects. A recent Council on Environmental Quality (CEQ) analysis found that the passage of the Fiscal Responsibility Act in 2023, which included a two-year time limit for environmental impact statement (EIS) issuance from federal agencies, had a limited impact on actual EIS review timelines.[17] Whereas 71 percent overran two years of review before the legislation was passed, 61 percent still did so afterwards. The federal review process, however, is one piece of a more complex puzzle: Other oft-cited permitting barriers include uncertain judicial review timeframes and guidelines, weak or absent coordination among local/state and federal authorities, and unclear authorities in critical infrastructure categories like interstate transmission and carbon capture infrastructure. This is why even well-intentioned efforts, such as the US Permitting Council (formerly the Federal Permitting Improvement Steering Council) and the recently established National Energy Dominance Council, often fall short of their aspirations.[18]

Our expert stakeholders consistently reaffirmed that this situation is problematic for any trajectory toward a more competitive and sustainable US industrial base, especially amid growing energy competition with the rise of AI and data-center fuel requirements. Industrial facilities depend on reliable and affordable energy access; historically in the United States, most have relied on natural gas as their primary source of fuel for many chemical and high-heat processes. The fuel sources for lower-emissions industry will likely become increasingly diverse over time—including use of advanced biofuels and biogases, various forms of hydrogen, geothermal energy, and advanced nuclear to support expanded electrification. Carbon removal and sequestration, likewise, may prove the best option for reducing emissions in industries where fuel replacement is technically or financially unviable. However, the full review and approvals process for a typical energy project in the United States today takes 4.5 years; a transmission project's review averages 6.5 years but regularly takes far longer to complete.[19] The overall costs, business case, and relevant regulations for a given project could be wholly transformed once a developer survives these timelines (and any subsequent litigation). Major industrial projects depend on certainty around energy availability and security of supply to enable multimillion dollar investments and secure contracts for eventual offtake of their products. This degree of uncertainty is thus untenable from a final investment perspective.

Recent efforts in Congress to enact comprehensive reforms into law have fallen short. The latest came in the bipartisan Energy Permitting Reform Act of 2024, cosponsored by then-Senator Joe Manchin (I-WV) and Senator John Barrasso (R-WY), with a companion House version championed by Rep. Bruce Westerman (R-AR).[20] This bill, if enacted, would include multiple high-priority reforms: a much narrower 150-day limit to file legal challenges against approved projects, expedited judicial review, provisions to accelerate all energy leasing on federal lands and waters, new categorical exclusions for transmission and distribution projects, and crucial updates to the 1872 Mining Law that still governs most minerals extraction

17. John Jacobs, "Permitting Speeds Up, but 61% of Reviews Are Still Late," Bipartisan Policy Center, January 28, 2025, https://bipartisanpolicy.org/blog/permitting-speeds-up-but-61-of-reviews-are-still-late/.
18. "Fact Sheet: President Donald J. Trump Establishes the National Energy Dominance Council," White House, February 14, 2025, https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-establishes-the-national-energy-dominance-council/.
19. "U.S. Permitting Delays Hold Back Economy, Cost Jobs," American Clean Power, April 2024, https://cleanpower.org/wp-content/uploads/gateway/2024/04/ACP-Pass-Permitting-Reform_Fact-Sheet.pdf.
20. Energy Permitting Reform Act, S. 4753, 118th Cong. (2024) (introduced), https://www.congress.gov/bill/118th-congress/senate-bill/4753.

A cargo ship at the Port of Oakland in the San Francisco Bay, California. REUTERS/Alexandria Sage

in the United States. Among these changes are revisions to the National Environmental Policy Act (NEPA), enacted in 1970, changes to which have been at the heart of partisan disagreements over how permitting reforms should proceed.

Whichever bill ultimately proves viable in both the House and the Senate, permitting reforms should be developed in such a manner that they enable both industrial sustainability and competitiveness. The key parameter of such a slate of reforms is a technology-neutral framework that considers the needs of a rapidly growing manufacturing base throughout the United States. This includes proactive planning for expanded use of federal lands and waters, and improvements to both timelines and the requirements of leasing therein. Different types of energy developers should face similar demands, criteria, and mitigation burdens, with agencies prevented from "picking winners" suitable to the political climate from one administration to the next. In this vein, permitting reform must acknowledge the new legal environment in the United States where deference to agency interpretations of laws is no longer guaranteed in the wake of the Supreme Court's 2024 ruling in Loper Bright Enterprises v. Raimondo.[21] When a reform bill endows new powers to specific agencies, such as the Federal Energy Regulatory Commission (FERC), the bill's language must provide clear and detailed explanations of that agency's remit and parameters therein. The same is true, perhaps even more so, for updated text for existing and highly contentious laws such as NEPA or the Clean Air and Clean Water Acts.

Two more specific elements to an industry-supportive reform bear emphasis.

First, permitting reform must take robust action on electricity infrastructure, especially long-distance transmission. This consideration may seem external to the industrial question since historically, power generation and industry were analyzed as separate sectors of the economy. This view is increasingly outdated, however, especially in the context of energy replacement in industry and the growth of AI. While electrification in industry has proceeded more slowly than in other sectors and estimates of change vary, some suggest that US industrial electrification could surpass 60 percent by

21. David L. Goldwyn and Andrea Clabough, "Chevron Deference Is Dead—and US Climate Action Hangs in the Balance," *EnergySource* (blog), Atlantic Council, July 11, 2024, https://www.atlanticcouncil.org/blogs/energysource/chevron-deference-is-dead-and-us-climate-action-hangs-in-the-balance/.

2040.[22] This issue of power supply is further elevated by the proliferation of AI applications for major industrial sectors. A recent survey conducted by Deloitte found that "55% of surveyed industrial product manufacturers are already leveraging gen AI tools in their operations, and over 40% plan to increase investment in AI and machine learning over the next three years."[23] In other words, industrial demand for AI—from product design to optimized manufacturing—is set to be another area of innovation and demand for AI services. The potential dramatic growth in AI-driven power demand has outsized implications for an already aging US grid. The future of US industry cannot be separated from the ability of the United States to deliver power wherever and whenever it is needed.

Second, permitting reform must also give special attention to the future of US carbon management—in this case, reforms specific to carbon dioxide infrastructure siting and permitting. In our first analysis, the prospect of a national CO_2 management strategy was elevated as a category of recommendations. In the interest of actualizing that recommendation, legislative support and strategic "fixes" in and around this emerging sector could be of tremendous benefit. A priority (but not comprehensive) list in this category includes:

- establishing statutory guidance that expedites EPA review of Class VI geologic wells and/or the issuance of state primacy to site and manage them;
- properly funding and staffing the research and analytical arms at key offices and agencies involved in carbon sequestration and infrastructure with new fiscal authorizations as needed;
- establishing responsibility for federal, state and local coordination in and around new carbon infrastructure within an appropriate agency; and
- a requirement for issuance of final carbon dioxide pipeline regulations from the Pipeline and Hazardous Materials Safety Administration (PHMSA) within a clearly specified timeframe.

2. Retain key industrial policy incentives and adjust only when necessary to make incentives more effective for their users.

The marquee legislative achievements of the Biden administration, such as the bipartisan Infrastructure Investment and Jobs Act, the CHIPS and Science Act, and especially the IRA, have spurred a new wave of US manufacturing investment and an emerging US industrial policy framework.[24] The IRA alone produced a groundswell of $493 billion in clean energy and infrastructure announcements within its first two years of enactment, an increase of over 70 percent from the preceding two years.[25] Another recent analysis argued that the IRA's energy-specific provisions are set to produce a fourfold cumulative return on investment for US taxpayers and grow the US economy by $1.9 trillion over the next decade.[26] Many of these laws' provisions are explicitly or indirectly geared toward US industrial investment, new industrial fuels, and technology suites that are foundational to future efficiency and sustainability gains in these sectors. Prominent in this category are the Clean Hydrogen Production Credit (Section 45V of the IRA), Advanced Manufacturing Production Tax Credit (45X), Advanced Energy Project Credit (48C), Clean Fuel Production Tax Credit (45Z), and the amended Carbon Sequestration Credits (45Q).

In the two and a half years since the IRA's inception, however, federal implementation of the new incentives has hardly been a smooth transition. In some cases, most notably the 45V hydrogen credits, implementation guidance for receiving the promised fiscal incentives was long-delayed or the subject of intensive lobbying and public-private dialogues on how to make the credits effective while retaining their original intention. The 45V credits, for example, were only finalized in mid-January 2025—just days prior to the arrival of a new presidential administration and after the opening of the 119th Congress, with Republican control of both chambers.[27] The latter has brought with it a host of other priorities as Republicans consider major budget-reconciliation legislation due to be passed by the end of this year. This situation has resulted in deep uncertainty over

22. Vincent Petit, "The Untold Potential and Rationale of Industrial Electrification in the United States," Schneider Electric Global Sustainability Institute, June 20, 2024, https://www.se.com/ww/en/insights/sustainability/sustainability-research-institute/the-untold-potential-and-rationale-of-industrial-electrification-in-the-united-states/.
23. John Coykendall, Kate Hardin and John Morehouse, "2025 Manufacturing Industry Outlook," Deloitte Research Center for Energy and Industrials, November 20, 2024, https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-outlook.html.
24. Curt Mueller, "Executive Leaders Embrace U.S. Manufacturing Renaissance," Forbes, May 18, 2023, https://www.forbes.com/sites/curtmueller/2023/05/18/executive-leaders-embrace-us-manufacturing-renaissance/.
25. "Tallying the Two-Year Impact of the Inflation Reduction Act," Clean Investment Monitor, joint project of Rhodium Group and MIT's Center for Energy and Environmental Policy Research, August 7, 2024, https://www.cleaninvestmentmonitor.org/reports/tallying-the-two-year-impact-of-the-inflation-reduction-act.
26. ICF International, "Economy-wide Impacts of the Inflation Reduction Act Energy Provisions," Prepared for American Clean Power Association, December 2024, https://cleanpower.org/resources/economy-wide-benefits-of-energy-tax-credits/.
27. "Credit for Production of Clean Hydrogen and Energy Credit," Rule, Internal Revenue Service, 90 Fed. Reg. 2224 (Jan. 10, 2025), https://www.federalregister.gov/documents/2025/01/10/2024-31513/credit-for-production-of-clean-hydrogen-and-energy-credit.

which credits, rules, and incentives for clean industrial fuels and technologies are likely to be retained in federal budget allocations as well as the all-important US tax code—potentially jeopardizing the outlook for hundreds of billions of dollars of announced (but not yet finalized) investments.

It is beyond the scope of this analysis to specify a revision of the tax code aligned with any given political orientation. Nevertheless, a near-constant theme among the stakeholders engaged with this study was that these existing laws, and their enduring and reliable incentive structures, are foundational to the success of early stage and emerging business lines. Moreover, it bears emphasis that outright repeal of these pieces of existing laws is counterproductive to the stated aspirations of this administration in multiple ways.

Most immediately, the industries that will form the heart of a competitive, sustainable industrial base are massive draws for new infrastructure and manufacturing jobs. In the carbon-management industries alone, for example, nearly 170,000 estimated jobs might be created in the Midwest and mid-Atlantic regions over the next fifteen years.[28] Direct air capture facilities, for example, can host 2,000 new jobs in their initial phases and maintain 700 permanent jobs during long-term operations.[29] These emerging sectors represent a significant new opportunity for any administration that seeks to expand US manufacturing jobs, potentially drawing in greater foreign investment into training and equipping American workers. This is, of course, to say nothing of the potential loss of production and investment tax credits for a range of low- and zero-carbon power-generation sources, which are crucial inputs to expanding electricity generation for any future industrial buildout as well as the growth of digitalization and AI throughout the whole economy.

To be sure, adjustments to how these incentives are applied may prove both necessary and constructive over the ten-year duration anticipated in the original IRA. Ideally, changes should be made to the implementing guidance (which comes directly from the Internal Revenue Service to taxpayers) with the active engagement of the industries implicated in these adjustments, rather than their outright elimination or textual changes that effectively render them unusable. An administration can offer new guidance, emphasizing certain principles or requirements over others, without undermining the entire business case for a given project relying on these incentives; indeed, it may be possible to adjust a guidance to be both more friendly to viable projects and more efficient as an expenditure. The main considerations for private-sector investors (and employers) are the certainty and durability of incentives over the most extensive runway possible. Therefore, it is in everyone's best interest to pursue adjustments that are modest in scope, do not undo the original intent of the text, and can attract sufficient bipartisan support (even if tacit) that successive administrations will not be tempted to issue wholly revised guidelines every few years. Where actual legislative trimming of these incentives is necessary or politically unavoidable, special effort should be made to insulate these industrial and manufacturing components of the existing laws as much as possible—such as ensuring a generous berth for existing or advanced-stage projects with high potential for being operational, or projects which directly support other objectives (e.g., secure domestic supply chains for a fuel or product with national security applications).

3. Pass the PROVE IT Act and consider passage of an existing or revised bill for a carbon border adjustment program.

These recommendations have focused so far on incentives to support more sustainable industry in the United States as a precondition for its long-term durable competitiveness. However, legislation which rewards American industry for its current efficiencies (and offers protection for innovation and improvements in this space over time) would provide critical insulation from overseas competitors lacking these attributes.

Concern over the carbon-intensity of industrial fuels and products is not itself a new phenomenon. What is new, and fast evolving, is how these concerns are shaping or reshaping the international trading system. Much ink has been spilled over the incoming EU CBAM, which ends its transitional phase this year ahead of implementation. Initially netting cement, iron and steel, aluminum, fertilizers, electricity and hydrogen, the CBAM will "put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, [and] encourage cleaner industrial production in non-EU countries."[30] Products from countries (like the US) lacking a comparable internal carbon-pricing system will eventually be required to purchase certificates as a form of levy payment.

The EU's new system has certainly intensified the global discourse around sustainable production of these conventionally emissions-intensive goods. A report by the International Emissions Trading Association suggests that the

28. Carbon Capture Coalition, 2025 *Federal Policy Blueprint*, n.d., 9, https://carboncapturecoalition.org/federal-policy-blueprint/.
29. Galen Bower, Nathan Pastorek and John Larsen, *The Benefits of Innovation: An Assessment of the Economic Opportunities of Highly Durable Carbon Dioxide Removal*, Rhodium Group, January 2025, https://a-us. storyblok.com/f/1020427/x/fd2f5080ab/the-benefits-of-innovation-an-assessment-of the-economic-opportunities-of-highly-durable-carbon-dioxide-removal.pdf.
30. European Commission, "Carbon Border Adjustment Mechanism," March 28, 2025, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

enactment of the EU policy has been a tremendous galvanizing force elsewhere: Japan has approved a "GX Plan" that will enable a national Emissions Trading System (ETS), China is considering extending its national ETS to some industrial sectors and establishing national accounting methods for its CBAM-impacted products, Turkey is set to launch an internal ETS system to align with that of the EU, and Australia has implemented a "Safeguard Mechanism" setting mandatory ceilings for emissions intensity in industrial production.[31] India, a country especially vulnerable to the incoming EU policy, will launch its own domestic carbon market to reduce emissions through intensity ceilings for facilities beginning in 2026.[32]

The United States does not yet have a national carbon-pricing mechanism and, as our first analysis described, there is considerable variation in how industrial emissions are measured and reported. Participants in this study emphasized that some American industrial sectors already boast mature lifecycle emissions data for their products, while others are much further behind. Given this lack of standardization or clarity, an immediate opportunity is the bipartisan-supported Providing Reliable, Objective, Verifiable Emissions Intensity and Transparency (PROVE IT) Act.[33] This bill is simply a study mandate: It would require the Department of Energy to study the emissions intensity of domestically produced industrial goods and compare these to the intensities of products offered by overseas competitors.

Study participants viewed passing this bill as essential to showcase US industry's highly energy-efficient processes (and thus bolstering the case for fair treatment in an environment where these metrics are increasingly important). Viewed through this lens, the application of border adjustment tools that reward US industry supports both fairer and more sustainable trade over time. By protecting efficient and low-emissions-intensity US producers, this approach can support US industry while also encouraging other countries to adopt more efficient industrial processes (spurring a rise to the top, rather than a race to the bottom) and expanding global markets for these high-quality goods.

The controversy around this legislation concerns the anticipated next steps: that standardized measurement and verifiable sectoral intensities of US industrial production inevitably leads to pricing or other punitive measures that force costly adaptations onto US companies. While the prospect of a federal study itself is not alarming to legislators who share these views, that of a US carbon border adjustment—with the power to penalize US industry—very much is.

Despite these valid concerns, the federal government (i.e., the current legislative and executive branches) should urgently consider how the United States will respond to, and ideally shape, a trading system that is preparing to treat emissions intensity and efficiency as a competitive issue. First, a US border adjustment plan need not undermine US industrial producers; especially in its early implementation, it should reflect and reward current efficiencies and create a level playing field among all producers, especially those competitors in less efficient, higher-intensity economies. This is the vision articulated in Senator Bill Cassidy's proposed version of border adjustment, the Foreign Pollution Fee.[34] This proposal from the Louisiana Republican would not place any fees on US industrial products; rather, it would use an available baseline analysis from the National Laboratories to compare US emissions intensities by product with national averages from imported versions. The subsequent border fee would be rendered based on the difference between the pollution intensity of the good produced in the foreign country compared to that produced domestically.

The Foreign Pollution Fee, as presently written, may not be the final version of a border adjustment bill that can pass the current or a future Congress; indeed, multiple competing Democratic versions exist and coordinating the details of a successful bipartisan proposal will be a process. But this bill's basic framework offers two key attributes in its favor: first, it can credibly establish the state of US industry with respect to intensity and efficiency and provide comparable data that may assist in trade discussions with partners (most immediately the EU). A final version of a foreign pollution fee, for example, might chronologically follow the passage of the PROVE IT Act, and its calculations be influenced by or directly based on those comprehensive findings.

Likewise, this version (or any other version) of a border fee is definitionally a revenue raiser. The current Congress is presently engaged in intensive budgetary and tax code negotiations; all of this compounds a delicate situation regarding the national debt, which could force difficult choices in and around the incentives for new energy and infrastructure detailed earlier. A fresh source of revenue, one which could secure broad bipartisan support and act as insulation for US industry, is a compelling option.

Undoubtedly, the groundwork (educational and legislative) for passage of either the PROVE IT Act and/or a border adjustment program will take months and perhaps years to achieve. The study envisioned by the PROVE IT Act could itself become

31. IETA, "International Reaction."
32. Anne Mulkern, "India's New Carbon Market Aims for 'Large Impact on Emissions Globally,' " Climate Wire, E&E News by Politico, March 31, 2025, https://subscriber.politicopro.com/article/eenews/2025/03/31/indias-new-carbon-market-aims-for-large-impact-on-emissions-globally-00255440.
33. PROVE IT Act, S. 1863, 118th Cong. (2023) (introduced), https://www.congress.gov/bill/118th-congress/senate-bill/1863.
34. Foreign Pollution Fee Act, S. 3198, 118th Cong. (2023) (introduced), https://www.congress.gov/bill/118th-congress/senate-bill/3198.

a multiyear process to be conducted in a comprehensive and credible manner. These punishing temporal realities confirm that these conversations must happen now, with such foundational work ahead yet to be completed.

4. Improve and expand US emissions-accounting capabilities and consider pathways to advance product- level standards and/or sectoral carbon intensity standards.

Finally, a major theme which emerged among our study participants and stakeholders was the importance of advancing US emissions-accounting tools and expertise. Similar to a border adjustment, emissions accounting brings the question of durable competitiveness back to data (or lack thereof) and the importance of demand generation for low-emissions intensity goods and services. In this context, carbon accounting refers to a methodology by which the emissions created to produce a given item (e.g., a ton of steel) are counted—usually across multiple types or scopes of emissions associated with that process. Notably, a US-based carbon border adjustment would need to rely on some form of broad sectoral carbon accounting method for each covered product in order to measure it against overseas imports since the United States lacks an economy-wide carbon price.

A wide range of carbon accounting tools, methods, and service providers exist, and many of these have been designed to support large multinational companies in understanding the emissions impacts of their businesses. The international Greenhouse Gas (GHG) Protocol, for example, is considered the central accounting framework for global corporate reporting of emissions data and related sustainability initiatives; it already offers a range of tools to understand differing goals and emissions produced within a given corporate value chain.[35] But these existing (and usually voluntary) tools may not be fit for purpose when considering the specific needs of industrial producers across different sectors.

Our stakeholders suggested that this might be a fruitful area for public-private collaboration, perhaps led by an agency like the Department of Energy. A deliverable of this dialogue process would be a US-specific "gold standard" accounting framework for each major industrial sector—one which would ultimately be endorsed by the federal government, utilized to gather new information about industrial emissions, and reveal gaps in existing government analytical capabilities. These frameworks, especially early on, would be road tested against real world conditions and the existing information environment, and operate with voluntary participation from companies and stakeholders within a given industrial sector.

Over the longer term, however, a robust accounting system could enable a virtuous trade-off or opt-in scenario, as some stakeholders suggested. The theme of overly burdensome, contradictory and multilayered environmental regulation has been a consistent barrier noted throughout this study process. If the US government could develop a credible and comprehensive accounting framework tailored to different industrial sectors, then promulgation of this framework alongside intensity and/or absolute emissions-reductions targets might be a plausible, appealing alternative for some major industrial projects or facilities. This would not necessarily require wholesale adoption by an entire sector; rather, companies, trade associations, or other governing bodies could choose to opt-in on a smaller-scale basis. In this scenario, for example, a new facility might agree to gradual improvements of emissions-intensity metrics for a given unit of produced goods and allow for consistent independent verification of that target and progress toward it. The relevant state and/or federal regulatory bodies charged with siting, permitting, and long-term oversight of that facility might then evaluate that commitment as a mitigating factor in their own analyses, or allow for analysis under a version of programmatic exclusion which enables expedited permitting. A credible and comprehensive emissions-accounting system would allow for long-term verification necessary in such a scenario and also provide the basis for penalties or other recourse if a company or facility failed to meet the agreed terms. In other words, facilities agreeing to emissions oversight and relevant metrics might be incentivized to take on these additional costs by offering a corresponding benefit or relief opportunity.

A useful accounting system, suitable for a given sector of US industry, should have multiple features. First, it must account for a wide range of greenhouse gases—including and especially methane, given both the urgency of managing methane emissions and the importance of understanding this category of emissions embedded within many US industrial production processes. A system should also be comparable to those used in other parts of the economy and comparable to those in other countries to enable cross-national comparison and thus easily understood differentiation. Our study participants also emphasized "future-proofing" an accounting system: i.e., developing a system that is flexible enough to integrate advances in information gathering and interpretation, such as those that may be afforded by the use of blockchain and AI. Ideally, these advances would reduce the cost of participation and compliance over time. In this vein, a suitable system should consider the best available, full lifecycle emissions analysis (LCA) as well as supply chains emissions analysis to the most finite degree possible (bearing in mind reasonable costs compared to the value of the data gathered, and available technology to do so).

35. "Standards & Guidance," Greenhouse Gas Protocol, accessed March 31, 2025, https://ghgprotocol.org/standards-guidance.

The latter point raises the issue of how this data is ultimately used and to what end. A long-term outcome of developing comprehensive emissions accounting for US industry could include the development of associated product standards. Our initial analysis cited some examples within the evidence available from two decades of Clean Electricity Standards (CESs) as well as other voluntary and market-based emissions standards. Broadly, these mechanisms have been shown to encourage more efficient processes and the adoption of cleaner fuels (in this case, renewable and zero-emission electricity) with relatively minimal adverse economic impacts or added costs for consumers. This model, however, does not offer a perfect analogy for industrial sustainability; after all, sectors like steelmaking and chemicals are catalogued as "hard to abate" sectors for a reason. Likewise, as indicated earlier, a national price on carbon or a national "clean fuels standard" is unlikely from a political perspective anytime soon.

What is more plausible is the concept of intrasector standards, promulgated and supported by industry stakeholders themselves and their associations or other governing bodies. This would imply a bottom-up approach rather than a top-down approach conceived by mandate. Standards under this umbrella could include consistently updated intensity standards per unit of a given product or service, targets for the development and use of alternative or lower-emissions fuels as a percentage of all fuel inputs, goals which support increased electrification of processes, or the addition of zero-emissions technologies (perhaps including a role for credible emissions offsets where appropriate).

The federal government can engage and support industrial companies or organizations pursuing internal standards of this variety. Keeping the relevant legislative incentives for clean power and fuels intact supports the economic case for standards. So, too, does progress toward border adjustments, which can insulate domestic industrial players from being undercut by foreign competitors not beholden to any similar pressures. Likewise, US officials can leverage such commitments (to the extent that they are credible and girded by demonstrable progress) in wider bilateral and multilateral trade discussions. Even without a national emissions-pricing system, US trade representatives might point to available sector-wide standards within the United States as justification for preferential or zero-tariff treatment.

Looking ahead, new standards (e.g., intensity or otherwise) for key industrial products might aspire to deeper levels of granularity than simply broad sectoral averages. Some stakeholders engaged in this study highlighted the value of product-level standards, ones which would fully account for and certify the embedded emissions of a singular unit of a product from any given facility or supplier. A product-level standard (one which ideally allows for item-to-item comparisons between producers and facilities) would enable suppliers to differentiate themselves from other suppliers of this type of products. It would provide high-performing companies in the same sector with a comparative advantage not just in comparison to overseas competitors but also domestic ones. Product-level standards might be reinforced by consumers in other parts of the economy (e.g., internal corporate mandates requiring higher percentages of finished goods from sustainable industrial fuels and components) as well as federal and state governments (e.g., procurement standards and contractor requirements). Over time, demand growth and wider markets for goods that meet a product-level standard should incentivize more and more suppliers to meet the bar, and by extension reduce the costs to do so with growing economies of scale. Product-level standards would ideally create market-based incentives for the entire sector to improve over time. Over the long run, US industrial products would not only retain but also expand their sustainability advantages.

While specific mandates requiring these changes in industrial production might produce a more comprehensive and immediate impact, the distortions and cost consequences for US industry make this option problematic. Likewise, the patchwork system of regulation that currently exists is an added cost, relies on oft-challenged federal regulatory authorities, and is deeply imperfect when applied to the industrial sector with its unique attributes. Greater clarity around emissions accounting in industry combined with progress around standards setting can underpin future markets of scale for these lower-emissions industrial products—with fewer negative consequences or unintended ripple effects elsewhere.

IV. Forging ahead

The pursuit of a competitive, durable, and sustainable US industrial base cannot be achieved or defined by any singular policy approach. In all likelihood, it will be the work of multiple administrations, many iterations of congressional leadership, and thousands of smaller decisions made in states and cities throughout the country. It cannot be the domain of one political party or scope of ideology; the challenge is far too complex, the opportunity too vast, and the costs of failure too great for this project to languish as a political football.

The recommendations detailed above are thus a starting point and the beginning of a conversation which will span multiple generations. At present, each of the most important sectors of US industry sit at an uncertain crossroads: countervailing pressures and mixed incentives abound. What does seem clear is that stagnation—doing nothing and hoping for the best—is the pathway that nearly assures a less competitive, less nimble American industry to be inherited in the decades to come.

Future industrial competitiveness demands forward momentum on sustainability, and those building blocks must be laid now. Leadership at all levels of government—and among forward-looking investors, companies, and project developers—will be needed to push key sectors off their own starting blocks. Critical decisions loom over the coming weeks, months, and years. American industrial leadership is needed now more than ever in this century of change, but that outcome is not yet guaranteed.

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