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From Green Jobs to Bidenomics: The Arc of Green Industrial Policy

Kate Gordon

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Carnegie Endowment for International Peace
Publications Department
1779 Massachusetts Avenue NW
Washington, DC 20036
P: + 1 202 483 7600
F: + 1 202 483 1840
CarnegieEndowment.org

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Introduction

The first piece in this series laid out the argument that extractive industries are inherently place-based, and that the communities that have grown up around these industries tend toward an economic and cultural loyalty that is exacerbated by their limited options for mobility. In a warming world where countries have nearly universally accepted the importance of moving away from extractive industries, these communities are likely to face both acute economic shocks from job and revenue losses, and ongoing shocks from climate-related disasters—exactly the disasters the energy transition is intended to slow or stop.

This can lead to a very bleak picture for communities whose economies are dependent on extractive energy industries. But parallel to the climate-driven energy transition is another kind of transition happening across the globe: from the economic theory of neoliberalism to a recognition of the importance of building more resilient, diversified, domestic industries. This global shift toward what Jake Sullivan, former president Joe Biden’s national security adviser, has called “[a modern industrial strategy](#)” could open the door to a new and more sustainable economic development approach, not only for extractive energy industry and other resource-based communities across the globe, but also for urban and rural communities that have been left out of energy or industrial growth models in the past.

[Some argue](#) that we are no longer moving toward a more sustainable industrial strategy given changes in federal leadership and politics. It is not clear that the United States, one of the world’s major economies and carbon emitters, still supports energy transition. President Donald J. Trump’s day-one executive order, “[Unleashing American Energy](#)” laid out a very different energy strategy aimed toward “energy dominance”—driving as much U.S. energy production as possible, likely with an eye toward using that energy production as a tool to accomplish larger geopolitical aims.

Even in this new era of increased fossil fuel production, energy transition matters.

But even in this new era of increased fossil fuel production, energy transition matters. As a recent [report](#) from the Carnegie Endowment’s Clean Energy Task Force emphasized, “the rise of clean energy is inevitable”—largely because of global investment flows and the rapidly decreasing costs of technologies like solar and wind, as well as decarbonization innovation in legacy industries like cement and steel.

Beyond these global clean energy market arguments, there are important local economic arguments for a transition away from fossil fuels. Oil and gas markets in particular are inherently volatile, and their constantly fluctuating prices have [significant impacts on local economies](#). Large capital investments in legacy energy systems continue to be subject to increased climate impacts as well as to geopolitical shocks. Local and regional economies continue to see a need to diversify away from these industries to avoid a “[resource curse](#)”—the idea that resource-rich economies trend toward weak economic growth, weak democratic institutions, and high rates of conflict—and instead build increased stability and resilience. And perhaps most important: Failing to pursue an economic agenda that creates real benefits across multiple energy technologies and supply chains, for real people in real places, will mean a failure of any political agenda to advance broader climate goals.

In short, driving a more place-based energy transition still matters. This article provides a review of place-based climate and energy policies from the past two decades—specifically, the road from the early “green jobs” work of the Apollo Alliance through the Waxman-Markey Bill and the Green New Deal (GND) up to Bidenomics—and what we’ve learned along the way. Only through a hard look at those lessons can we better understand how policymakers, politicians, and advocates can begin to move forward toward a new and more robust approach to energy transition, one that is fully integrated into local economic strategy.

It starts with the [move away](#) from neoliberalism.

Neoliberalism

For nearly half a century, economic leaders in the United States and many other developed countries have pursued a neoliberal approach to development. This model is based on the assumption that the free movement of goods and capital will result in consumer goods being cheaper and thus more available to people of all income levels, raising the standard of living across the board. Making goods cheaper and more available requires producing them more cheaply, which tends to drive manufacturing toward countries with lower labor costs and

regulatory barriers. Neoliberalism would hold that this is not necessarily a bad thing: It frees up countries with higher-skill workers to pursue innovation and the “[knowledge economy](#)” while driving middle-skill jobs toward developing countries.

One obvious example is the transition of significant manufacturing jobs—for example, in solar panel production—from the United States and Europe to China. China’s focused industrial policy, aimed at increasing its share of global manufacturing, raised the standard of living for millions of Chinese citizens while driving down the cost of goods, [such as solar panels](#), for U.S. and European consumers. Meanwhile, the U.S. government shifted focus away from manufacturing and [toward innovation-based strategies](#), concentrating wealth among relatively few software companies and workers in tech hubs like Silicon Valley, Route 128 in the Boston area, and North Carolina’s Research Triangle.

The neoliberal approach to economic growth has offered significant benefits. In China, India, and South Africa, billions have moved out of poverty into middle-class jobs. This has had huge positive effects both within those countries and for other countries to which newly educated Chinese, Indians, and South Africans have migrated to pursue degrees and jobs. Many noted economists, including former chair of the White House Council of Economic Advisers Laura D’Andrea Tyson, [have argued](#) that free movement of goods and services demonstrably reduced inequality across countries over the second half of the twentieth century.

At the same time, there is growing evidence that the neoliberal approach has increased inequality *within* developed countries like the United States, which moved from a fairly balanced and diversified economy in the late 1970s (when manufacturing employment was at its peak and wealth was broadly shared) toward one characterized by a small percentage of very high-income innovation or “knowledge worker” jobs on one end and a large number of inadequately compensated service and retail jobs on the other. The San Francisco Bay Area, where I now live, is a stark example of this type of economy: According to [Joint Venture Silicon Valley’s annual index](#), in 2022, the top 10 percent of households in this nine-county region held 66 percent of the region’s total wealth, and just eight Bay Area individuals held more wealth than the bottom 50 percent (nearly half a million households) *combined*. More recently, San Jose State University put out a 2025 [Silicon Valley Pain Index](#) showing that just nine households in the Bay Area own 15 percent of the region’s wealth.

Shocks to the System

Coming into the twenty-first century, the neoliberal economic model seemed to be standing firm, if frayed around the edges. But several events have shaken its foundations and laid the groundwork for a new model for economic growth and, in parallel, for the emergence of a new and more localized approach to industrial policy.

The first shock to this system was the Great Recession of 2007–2009, the aftermath of which affects housing and financial markets to this day. Two key contributing factors to the financial crisis stand out as being most relevant to location-based economic transitions: a lack of regulation (in this case, in the financial markets), and an assumption that a strong economy could be built on the back of seemingly cheap goods. In their 2013 article [“The China Syndrome,”](#) economists David H. Autor, David Dorn, and Gordon H. Hanson estimated that increased Chinese imports to the United States accounted for more than half of the decline in domestic manufacturing jobs between 2000 and 2007. The resulting decline in wages across the industrial United States coincided with temporarily cheap housing propped up by subprime mortgages; when the housing bubble collapsed, many workers no longer had family-supporting manufacturing jobs to turn to.

The second major shock was the global pandemic of 2020–2022. COVID-19 produced many disastrous consequences during this period, including more than [7 million deaths](#) across the world. But the pandemic also [massively disrupted global supply chains](#). The United States, having offshored so much of its basic manufacturing, scrambled to find ways to produce critical goods like face masks and hand sanitizer, not to mention a vaccine for the disease. Many came to realize that the United States had become increasingly dependent on other countries, [most notably China](#), for the vast majority of these goods. America was suddenly and frighteningly vulnerable to this kind of global shock.

The third shock came with Russia’s invasion of Ukraine in 2022. Russia’s strategic curtailment of the flow of natural gas to Europe, which had become extremely dependent on pipelines staying open to power its electric grid, was a stark reminder of how easily globally-traded fuel can be used as a pawn by hostile powers. Luckily for Europe, but not for global emissions goals, the United States was able to increase gas production to keep the lights on for its allies across the pond.

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Finally, throughout each of these shocks runs the ongoing and increasing shock of climate change itself. Climate impacts like floods, fires, and extreme heat present a significant risk to a globalized, free market economy. The idea that a country or company should mine critical minerals and manufacture goods wherever it can find the cheapest labor and lowest regulation often means it will be mining and manufacturing in the Global South—in the countries most vulnerable to extreme impacts from climate change. Extreme weather can cause major disruptions to global supply chains. In 2011, an earthquake and resulting tsunami in Japan [brought auto manufacturing to a halt](#), resulting in over [\\$350 billion](#) in economic losses to the country as well as production hits to every major auto manufacturing company. Hurricanes that take out oil rigs, like [Hurricane](#)

[Ida in 2021](#), can change global oil prices, with a ripple effect not only on local gas prices but on food, manufactured goods, and all the other industries currently dependent on fossil fuel inputs. Drought across the [“bean belt”](#) where coffee and cacao beans dominate local agriculture can wipe out crops and drive out-of-work farmers north to the U.S. border.

A New Industrial Strategy

This series of shocks to the neoliberal system helps to explain why, upon taking office in 2021, U.S. president Joe Biden and his advisers focused on building economic resilience. “Build Back Better”—the umbrella term for Biden’s economic approach, also sometimes called “Bidenomics”—was anchored in the idea that the coronavirus pandemic presented an opportunity to rethink the U.S. approach to economic development and to build something stronger, more resilient to future shocks, and more inclusive in the face of the inequality exacerbated by the pandemic.

Importantly, the Biden economic approach focused not only on industrial policy, but on climate change’s specific impacts on the economy resulting from the imperative to transition away from carbon-intensive electricity and fuels to meet global climate goals, and (to a lesser extent) the physical impact of climate change on existing industries in the United States. This, to my knowledge, was the first time a U.S. president has articulated a goal of a more sustainable and resilient economy while recognizing the central role climate change plays in economic growth.

Executive orders were essential to this effort, and perhaps none more so than that signed one month into the president’s tenure, in February 2021: [“America’s Supply Chains.”](#) This order was an explicit foray into industrial policy and identified a set of industries for the United States to pursue in order to build a more competitive and resilient economy. The first paragraph read:

The United States needs resilient, diverse, and secure supply chains to ensure our economic prosperity and national security. Pandemics and other biological threats, cyber-attacks, climate shocks and extreme weather events, terrorist attacks, geopolitical and economic competition, and other conditions can reduce critical manufacturing capacity and the availability and integrity of critical goods, products, and services. Resilient American supply chains will revitalize and rebuild domestic manufacturing capacity, maintain America’s competitive edge in research and development, and create well-paying jobs.

The order went on to identify specific industries for intensive development, focusing on those with national security, health, or climate benefits; they included semiconductors, high-capacity batteries especially for electric vehicles, critical and rare earth minerals, and pharmaceuticals. At the same time, the order made clear that development of these industries must be done in a way that supports workers and communities, not only through good jobs but also through place-based economic benefits:

Resilient American supply chains . . . will also support small businesses, promote prosperity, advance the fight against climate change, and encourage economic growth in communities of color and economically distressed areas.

Despite the political polarization of the United States, Congress delivered a quartet of major bills—three of them bipartisan—that supported this industrial strategy. In addition to providing pandemic assistance to state and local governments, the American Rescue Plan (signed into law in February 2021) also [increased funding](#) for the Economic Development Administration tenfold—from about \$300 million to \$3 billion—so that regions (defined by applicants and encompassing anything from collections of counties to multi-state regions) could begin planning for a more resilient future. As of this writing, the Infrastructure Investment and Jobs Act has resulted in appropriations of [over \\$700 billion](#) into the kinds of domestic infrastructure projects that will anchor the next phase of the U.S. economy (specific investments by state and sector are also being tracked by independent researchers, such as the [American Society of Civil Engineers](#)), and also into key clean energy demonstration projects that otherwise would likely be pursued overseas—including in the “America’s Supply Chains” executive order’s stated priority areas: advanced batteries and electric vehicles. The CHIPS and Science Act of 2022 doubled down on semiconductors as a priority industry, driving [at least \\$200 billion](#) to research, development, and deployment in that area. And the Inflation Reduction Act put wind in the sails of all the prior bills, providing massive incentives to the private sector to invest in these key sectors—though some of that bill’s key provisions, [especially those focused on the wind and solar industries](#), have been rolled back in the Trump administration’s One Big Beautiful Bill Act.

From “Green Jobs” to a More Sustainable Economy

As is obvious in the “America’s Supply Chains” executive order and the legislation that followed, the Biden-era approach to economic transition from neoliberalism was not only intended to support new investment into the domestic economy—it was intended to support

a more *sustainable* economy. This economics-driven policy response to climate change was a significant departure from prior climate policy approaches, which nodded to economic impacts but often treated them as secondary to the goal of reducing global carbon emissions.

The United States has seen decades of critically important work to improve environmental standards, most significantly the Clean Air Act and Clean Water Act of the 1970s. A huge amount of public engagement preceded those bills and made them politically possible. In general, the legacy of the anti-pollution, pro-conservation environmental movement and its impact on the rise of broader global climate action cannot be overstated: Many of the key individual and organizational players in the climate movement (which by necessity has to tackle economic, financial, and trade issues along with point-source greenhouse gas pollution regulation) came out of the environmental movement and brought important lessons in organizing, regulation, and political pressure to bear on fighting climate change.

But that legacy also led to a set of early domestic climate approaches that were fundamentally part of the same anti-pollution, mostly regulatory playbook, and that often failed to account for other outcomes, including local economic impacts. Seminal environmental policies such as the National Environmental Policy Act (and its California analog, the California Environmental Quality Act) were initially passed with the specific intention of minimizing environmental harm from individual development projects. While these bills have been increasingly [drafted into service to address climate impacts](#), they were originally passed and implemented with the primary goal of stopping local environmental harms, rather than as tools in building a new and positive model for sustainable economic growth. Driving this new model requires new tools and policy approaches that build on the important environmental regulatory work done throughout the latter part of the twentieth century, but that also broaden that approach to include economic, financial, and political outcomes. The first green shoots of these new policy approaches have begun to grow out of a series of initiatives throughout the early decades of the twenty-first century.

Alliance-Building in Support of “Green Jobs”

One of the earliest U.S. efforts to drive clean energy solutions not as a purely environmental strategy, but as an economic imperative, came through the creation in 2003 of a policy project that eventually grew into an NGO called the Apollo Alliance. Watching the rise in U.S. oil and natural gas imports (which [peaked in 2007](#) at about 16 percent, making the country the largest importer of natural gas in the world), the public’s increasing awareness of the need to address global warming (as it was then still called), and the limits of traditional environmentalism to address these interdisciplinary challenges, the organization’s founders saw an opportunity to make the case for a new set of policies to drive domestic clean energy development. The initiative that became the Apollo Alliance brought together four key constituencies in a common agenda to build a new clean energy economy: environmentalists

wanting to move away from fossil fuels toward more renewable and sustainable energy sources, labor unions wanting to build out a domestic industry with good middle-skill jobs, businesses wanting to innovate and build clean energy systems, and community groups looking for local economic investment and shared prosperity.

The Apollo Alliance (where I served as the first policy director from 2004 to 2008 and then national codirector until the organization’s merger with the BlueGreen Alliance in 2009) filled an important role in U.S. energy policy by recognizing that energy generation and consumption are local issues, and that organizing around energy policy requires local engagement. The organization initially included both a Washington, DC, headquarters and a University of Wisconsin–based center for state and local policy. These two hubs supported thirteen state and local Apollo chapters across the country—the spokes. This was an important model because it recognized that while federal policy on climate change is integral to creating markets for new low-carbon technologies, the real work of implementation and project development happens on the ground, in specific communities and for specific subsets of industries and workers.

Each of the local Apollo Alliances brought the four major constituent groups together to identify and advocate for clean energy policy in their jurisdiction. Importantly, each of the local alliances included place-specific stakeholders most relevant to energy policy in that location given its politics, culture, and history. In California, for example, the Oakland Apollo Alliance was co-convened by the Ella Baker Center for Human Rights and had a strong community focus, while the Los Angeles Apollo Alliance, housed at the community organizing nonprofit SCOPE, was more labor-centered from the outset. In some states, labor was represented by United Steelworkers; in others by the International Brotherhood of Electrical Workers; in others by SEIU or similar non-industrial unions. In some cities, major environmental organizations or “green groups” were on board; in others Apollo gave voice to emerging local environmental justice coalitions.

These local alliances helped to push for critical state and local policies, including many of the first Renewable Portfolio Standards and Renewable Fuel Standards, which required a percentage of electricity or fuel in specific states to come from renewable sources (thus displacing natural gas or coal). But a central tenet of the Apollo Alliance was that a green job isn’t automatically a good job, and so these policies also included requirements or incentives

to ensure the growth in renewable energy would also bring family-supporting jobs and tangible community benefits. Apollo also engaged at the federal level, helping to craft key policies like the clean energy manufacturing tax credits and Energy Efficiency Community Block Grant Program that ended up in the Barack Obama administration’s [American Recovery and Reinvestment Act \(ARRA\)](#), which aimed at rebuilding stronger local economies after the Great Recession.

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But from a broader policy perspective, the Apollo Alliance is mainly [known](#) as the first to put a number on the potential jobs that could be created through a coherent and integrated clean energy policy and investment strategy. Its signature 2004 report, [New Energy for America](#), argued for a \$300 billion federal investment into clean energy infrastructure, building codes and appliance standards, transmission and distribution systems, and renewable energy projects. In a prescient move, the report argued for investments into carbon capture and sequestration and hydrogen (policy goals then put on the shelf for another decade). It also made the case for smart growth and transit policies that have, [until very recently](#), largely fallen out of the national climate conversation.

These investments, the report argued, would not only create the critical infrastructure and innovation necessary for the United States to become less dependent on imported energy and more competitive in the new energy economy; they would also create 3 million new jobs. Economic analysts at the Perryman Group derived this number using standard input-output analysis: plugging in numbers for investment into specific industries (such as building construction, manufacturing, or transportation) to estimate jobs created per dollar invested. This jobs estimate addressed concerns about America’s energy dependence, and the 3 million jobs prediction was included in the campaign platforms of not only the two major Democratic candidates for president in 2008 (Obama and Hillary Clinton) but also Republican candidate John McCain.

The bipartisan political salience of green jobs proved attractive to environmental organizations, which had struggled to get traction on climate policy from a purely environmental standpoint. A core message was often lost, however, as the 3 million jobs number was cited without reference to the targeted public and private investment agenda that was the basis for that job creation.

A notable research challenge to the green jobs approach at that time was that there was no such category of jobs in the public data sources that economists and policymakers used to identify job numbers and occupations in the American economy, such as the Bureau of Labor Statistics’ (BLS) North American Industry Classification System (NAICS). In contrast, traditional energy jobs in oil and gas or mining had their own NAICS codes. For example, “oil and gas extraction,” “petroleum and coal products manufacturing,” and “gas stations” are considered to be industries. In the past decade, several new codes have been created to cover major aspects of the renewable energy industry; “solar electric power generation” and “green building construction” are two such categories. But these codes are imperfect, given that many jobs that could fall under them can also be categorized under other traditional industry codes. A solar panel installer is likely also counted as an “electrical contractor.” Someone doing green building is likely also classified under “engineering services.”

This type of overlap is less likely in the fossil energy system, where jobs are more often permanent and full-time and thus classified more specifically. This makes it difficult to credibly offer any real estimate of “green jobs” versus “traditional energy jobs” using input-output

modeling or similar modeling tools. In fact, the often-repeated “[coal job vs solar job](#)” comparison is a good example of this challenge: When counting “coal jobs,” most estimates focus on jobs in the coal mining industry, which has a NAICS code. But “solar jobs” are counted using every job that touches solar across multiple NAICS codes, including construction (solar installers), manufacturing, transportation across supply chains, and all the related jobs in sales, accounting, and other administrative fields. In addition, solar job counts tend to include all jobs, whether temporary or permanent. There’s no question that solar jobs are on the rise and coal jobs are in decline, but attaching actual numbers to this comparison using standard job counts is a highly suspect endeavor. Because the real job numbers are not well reflected in BLS data, the most credible studies of job creation in renewable energy and related industries tend to come from direct surveys of companies, with perhaps the most robust count being done through the U.S. Energy and Employment Report, prepared annually for the Department of Energy.

During the Apollo Alliance era, some effort was made to correct this problem. ARRA, the [Obama-era bill](#) intended to support U.S. recovery from the Great Recession, included [direction](#) to the BLS to create a new set of NAICS codes in order to “develop information on (1) the number of and trend over time in green jobs, (2) the industrial, occupational, and geographic distribution of the jobs, and (3) the wages of the workers in these jobs.” But a challenge remained: Jobs in renewable energy and energy efficiency industries are incredibly difficult to separate from existing occupational categories at the BLS. For example, an electrician installing a rooftop solar system would be classified as an electrician—not as a “solar installer”—because their job might easily also include installing a hot tub or a new electrical panel, depending on the day. Full-time jobs in solar manufacturing are likely more accurately counted, but as noted above, few of these exist in the United States even to this day. Those that did exist in the period from 2003 to 2009 when the Apollo Alliance was active would likely have been coded under the broader NAICS category of “electrical equipment, appliance, and component manufacturing.”

One thing that became clear through the Apollo Alliance’s work with BLS data and concurrent efforts to put a number on the concept of green jobs was that the majority of the jobs created through clean energy investments are in long-standing industries, primarily construction, manufacturing, and engineering. These are not exotic niche jobs; they are jobs that have existed since nineteenth-century industrialization, at a minimum. They’re just newly focused on lower-carbon buildings, infrastructure, or technologies. In other words, there are no green jobs—rather, there are jobs that result from the greening of the entire economy.

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In *New Energy for America*, the Apollo Alliance argued for investment into a wide range of infrastructure and technology fields to create a diversity of climate-friendly jobs, with the understanding that these would be best for American communities and workers if they were high-quality jobs with pathways

to prosperity—sometimes called “[high-road](#)” jobs by labor and workforce development experts. But by the end of the Obama administration, many environmentalists and political leaders had narrowed the idea of green jobs down to a focus mostly on renewable energy installation and energy efficiency or weatherization jobs—jobs positioned not as a core part of the broader economy, but as an alternative to it. Treating jobs in these specific, narrow industries as separate from the traditional energy economy opened the door to endless comparisons between numbers of “fossil fuel jobs” versus “green jobs,” with little attention to types of jobs, job quality, or the specific policies and investments necessary to effect the energy transition that would create this new economic activity in the first place.

The Waxman-Markey Bill

Counting potential green jobs was a key part of the advocacy effort in 2010 to pass a national policy to limit carbon emissions across the economy through a market-based mechanism known as “cap and trade.” The bill that would have accomplished this critical goal was known as the Waxman-Markey Bill, after its two congressional authors, though its official name was the [American Clean Energy and Security Act of 2009](#). Harvard’s Theda Skocpol wrote one of the [most comprehensive analyses](#) of the bill’s fate after it passed the House but failed to come to a vote in the Senate, in which she described the environmental movement’s strong hold over the political and advocacy strategy for the bill, in contrast to the much more diverse stakeholder groups backing the ultimately successful Affordable Care Act.

Skocpol may in fact have overstated the potential for the Waxman-Markey bill to anchor an impactful industrial strategy that could create high-quality jobs and lasting industries across every region of the United States, and by extension the failure of the major environmental groups supporting the Waxman-Markey bill to bring important pro-business, pro-worker votes to the table. In fact, without corresponding economic and workforce policies, many new clean energy jobs spurred by carbon pricing could easily have been short-term and lower-quality than those lost, or geographically located far from the communities most affected by fossil fuel employment declines. In addition, the bill lacked significant complementary investments into reshoring clean energy manufacturing, repurposing closed and closing fossil fuel facilities, and re-skilling (or providing retirement bridge funds for) industrial workers at risk of job loss from energy transition. That is, the most powerful advocates in the Waxman-Markey fight neglected to pursue some of the policies that became core components of the Build Back Better agenda.

The Green New Deal

If the approach to energy transition during the first decade of the twenty-first century was characterized by touting green jobs as an alternative to fossil energy jobs (and, in the most ambitious cases, as a [savior for the entire post–Great Recession economy](#)), the following decade was defined by a new phrase and approach: the Green New Deal.

Where organizations like the Apollo Alliance, the BlueGreen Alliance, and a number of European think tanks pursued “green economy” approaches grounded in arguments for bolstering domestic energy production and economic growth, the GND was focused on meeting global carbon emission reduction goals through industry subsidy and social safety net policies. Both relied heavily on government spending. But Apollo and its allies positioned public spending as a way to de-risk projects and spur private investment, while the GND represented a real turn toward a broadly socialist, big-government agenda.

The GND (officially “[Recognizing the Duty of the Federal Government to Create a Green New Deal](#)”) was introduced in 2019 by House of Representatives newcomer Alexandria Ocasio-Cortez. The bill’s central goal was a ten-year mobilization to reduce carbon emissions in the United States through investments in renewable energy, the power grid, electric vehicles, and mass transit systems. But it went further, arguing that the U.S. responsibility to address climate change was also a responsibility to address decades of local environmental impacts, income inequality, and wage stagnation. Like the Apollo Alliance’s original proposal, the GND included calls not just for green job creation but for the creation of high-quality jobs with the right to join a union—and for reinvestment into domestic manufacturing as a pathway toward those jobs. But the GND went further, calling for universal health care, universal affordable housing, and rules against corporate monopolies. In short, the GND was a call to reshape the entire American economy, not only America’s energy economy.

Economic and political shocks—particularly the Great Recession and Donald Trump’s accession to the presidency—did much to inform this shift, as did changes within the energy sector itself, in particular the advent of hydraulic fracturing, or “fracking,” in the early part of the twenty-first century. This method of extracting natural gas from complex geologic formations revolutionized energy production and fundamentally reshaped energy geopolitics, firmly anchoring the United States as an energy producer and exporter rather than a country dependent on global energy flows.

As fracking became less expensive, liquid natural gas import terminals became export terminals, and [calls for “homegrown energy”](#) no longer came only from renewable energy advocates but also from fossil fuel companies and lobbyists. The rationale for the energy transition shifted toward addressing climate change, which has generally been a far less bipartisan issue—especially as states like [North Dakota, New Mexico, and Colorado](#) began to benefit economically from the natural gas boom. This huge ramp-up in natural gas started around 2011, coinciding with the decline of ARRA investments in clean energy and the failure of Waxman-Markey, both of which were central reasons that the promised wave of green jobs never fully materialized.

Fracking has had measurable economic benefits, including [lower gas prices](#) within the United States. At the same time, communities at the center of the fracking boom began to experience the direct impacts of drilling, including [methane leaks](#) into air and water and [mini-earthquakes](#) in some areas. Fracking, which (like other extractive industries) is

inherently place-based and tied to the location of the oil and gas being fracked, became a symbol for the local pollution impacts of the fossil fuel economy. The anti-fracking movement ultimately joined forces with longtime opponents of oil drilling, coal mining, and other extractive industries under the broad banner of environmental justice.

Recognizing these impacts on people and places, the Green New Deal focused not only on the number of potential new green jobs that would come from this transition, but on raising job quality across multiple sectors to reverse a [“4-decade trend of wage stagnation, deindustrialization, and anti-labor policies.”](#) The GND included specific policies for both communities transitioning away from fossil fuels as their main economic driver and communities historically left out of economic growth policies—the disadvantaged communities that would become a key focus for the Build Back Better program in later years. And, unlike both the Apollo Alliance vision and the Waxman-Markey bill, the GND tried to address the urgent issue of immediate and future physical climate impacts affecting the economy, workers, and communities.

But even as it took these critical steps toward a more place-based, integrated, and economy-wide approach to addressing climate change, the GND may have taken some steps backward in building political will for climate action. In particular, the proposal offered a narrow view of what should and should not count as “clean energy,” maintaining a focus on renewable energy and energy efficiency but leaving out some other (admittedly more industrial and therefore more uncomfortable for local communities) technologies like bio-based energy and fuel, nuclear energy, hydrogen, and carbon removal. Excluding these types of energy from discussions of “clean energy” not only limits the transition to a set of technologies that cannot, on their own, substitute for fossil fuels; it also limits the transition to the clean energy industries with the fewest permanent jobs and the smallest contributions to local tax bases.

While taking an overly narrow approach to the technology, the GND took an overly broad approach to the policy, seeking to address the full range of economic issues stemming from decades of neoliberalism and anti-worker policies. For example, the bill guaranteed “a job with a family-sustaining wage, adequate family and medical leave, paid vacations, and retirement security to all people of the United States” while “ensuring a commercial environment where every businessperson is free from unfair competition and domination by domestic or international monopolies” and “providing all people of the United States with high quality health care; affordable, safe, and adequate housing; economic security; and clean water, clean air, healthy and affordable food, and access to nature.” Attaching these broad goals to energy transition policy turned a place-based economic development approach into a proposal to upend the entire U.S. economy, safety net, and tradition of local control over land use planning. Including the kitchen sink of progressive policies put a target on the back of not only the broader bill but also the narrower sections focused on achieving a just energy transition.

Finally, the GND, while exactly right on the macroeconomic arguments for more domestic

The assumption that a fossil fuel job is entirely a bad job is as simplistic as the assumption that a green job is entirely good.

energy production and quality jobs, lacked a sense of the reality of the fossil fuel economy as it plays out on the ground: in energy extraction communities. In painting the fossil fuel economy as synonymous with its global climate impacts, the GND ignored the reality that fossil fuel energy companies are often excellent employers who provide substantial benefits to the communities where they do business. The assumption that a fossil fuel job is entirely a bad job is as simplistic as the assumption that a green job is entirely good. Many of the unionized workers in oil and gas or adjacent industries had had positive experiences with their employers and were turned off by the GND rhetoric.

But the GND did highlight something incredibly important, and difficult, about the energy transition in America. To achieve a more sustainable and resilient economy, and one that creates broadly shared prosperity, U.S. policy must support a major build-out of industry, including manufacturing. At the same time, to do this without perpetuating historic redlining and discrimination, energy policy has to support democratic processes that allow communities and workers a voice in that industrial development. The clean energy economy is still an industrial economy, but hopefully one where benefits and burdens are more equally shared.

COVID-19 Shocks

The stark reality of America's lack of resilience in supply chains and industrial systems became clear in 2020. Let's consider California, where I was serving as the director of the Office of Planning and Research in California Governor Gavin Newsom's administration.

In a way, California's experience of COVID-19 could be seen as a microcosm of the pandemic's broader global impacts. The state is geographically huge, with both extremely urban and extremely rural areas. It has an economy that encompasses resource-based industries such as timber, food, oil, and gas as well as the creative industries of Los Angeles and multiple tourism hubs. It includes an international border and an extremely diverse, majority-minority population.

I saw this firsthand in my role in the California Governor's office, where then California labor secretary (later acting U.S. secretary of labor) Julie Su and I co-led a working group of the governor's Task Force on Business and Jobs Recovery in 2020. As part of our work, we did a deep dive into the impacts of COVID-19 on counties across the state, and found that those regions that had shifted almost entirely to "knowledge economies"—so beloved by urbanists and economists throughout the 1980s and 1990s—were hit hardest. San Francisco is a prime example: The city spent decades courting tech companies, and by 2020 its downtown office buildings were nearly all leased by companies like Twitter, Google, and Salesforce. When COVID-19 hit, tech-sector workers were largely able to work from

home, and some fled to second or third homes in other parts of the state or country, while retail and service workers were out of jobs and out of options. San Francisco still hasn't fully recovered from the hollowing out of its downtown; the city's commercial vacancy rate was still at nearly 35 percent as recently as summer 2025.

Counties with more diversified economies, especially those that included only moderate manufacturing and supply chain operations, were more stable during COVID-19. This makes sense given the breakdown of global supply chains in the early days of the pandemic and the resulting ramp-up of domestic production. Like other firms across the United States, [some California companies](#) were called into service making face masks, hand sanitizer, and other personal protection equipment.

These snapshots of different parts of the California economy underscored to the governor's office the vulnerability of regional economies that are too dependent on any one type of industry, whether that industry is an extractive energy industry like oil and gas or a knowledge economy industry like software or biotech. In either case, if the region focuses on just one element of the supply chain (extraction or refining or coding) and allows other production jobs to go elsewhere, that region will be less resilient in the face of any kind of shock—geopolitical, pandemic-related, or environmental.

Bidenomics: The Rise of a Place-Based Industrial Strategy

At the same time the COVID-19 pandemic exacerbated economic vulnerabilities across the United States, the 2020 presidential election season was heating up.

COVID-19's impact on the election had long-lasting consequences. The suite of four bills that together make up most of the Biden administration's Build Back Better agenda might never have been introduced or passed were it not for COVID-19. At a high level, as we saw in California, COVID-19 was a stark case study for many Americans, who [recognized](#) that the U.S. economy had become highly dependent on trade with other countries and on China in particular. At the same time, COVID-19 [laid bare the inequality that had existed in the economy for decades](#), especially for workers and communities of color, but also for the much larger swath of workers stuck in entry-level retail and service jobs with no opportunities for advancement. These impacts brought together a surprising coalition of anti-China and pro-labor, pro-equity advocates and legislators to pass the most significant American economic legislation since the post-WWII era, and the most significant energy transition legislation ever.

The Biden administration sought not just to bring some of the supply chain back into the United States but to try to create real benefits on the ground from these investments. Build Back Better—first a creature of the campaign and then incorporated into the American Rescue Plan, the Infrastructure Investment and Jobs Act, the CHIPS and Science Act, and the Inflation Reduction Act—was the natural culmination of the work of the Apollo

Alliance, the Waxman-Markey bill, and the Green New Deal. It reflected their earlier focus on pragmatic, place-based, long-term strategies to build a more sustainable and resilient American economy that could withstand future geopolitical and climate shocks.

Whether those policies were in fact durable is now in question. The second Trump administration is taking a different, and not yet entirely clear, approach to domestic and global energy and economic policy. While rolling back some of the specific incentives for renewable energy industries that were a central part of the Inflation Reduction Act in particular, the current administration has also taken an even more aggressive approach to onshoring some other parts of the clean energy supply chain, in particular critical minerals and nuclear power. The administration's tariff and trade policies are also explicitly pro-domestic manufacturing.

In this new era of "energy dominance" combined with levels of economic protectionism not seen since the [early twentieth century](#), where does green industrial policy stand? The past twenty years of work leading up to the Bidenomics agenda underscore the importance of state and regional networks in making the case for a new kind of economy that can simultaneously drive shared prosperity, sustainability, and resilience. It may be time to turn back to those subnational models to find opportunities for continued progress. Future research will explore that question, looking specifically at California as one state with the potential to demonstrate a new model of place-based energy transition that can stand up to the current global chaos.

About the Author

Kate Gordon is the CEO of California Forward (CA FWD), a statewide organization dedicated to a more sustainable, resilient, and inclusive economy across every region of the state. Gordon has spent the past two decades working at the intersection of climate change, energy policy, and equitable economic development.



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