How America Can Make Industrial Policy Work

The New Laws Alone Aren't Enough

By John M. Deutch and Ernest J. Moniz
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U.S. President Joe Biden signs the Inflation Reduction Act into law, Washington, D.C., August 2022
Leah Millis / Reuters

"A nation can be transformed," U.S. President Joe Biden announced on August 16 at the White House when he signed the $737 billion Inflation Reduction Act into law. The act will indeed reshape the U.S. economy. In addition to provisions on health care and reducing the size of the deficit, the bill has as its centerpiece

$369 billion in green tax credits, manufacturing investments, and other initiatives that will do more to fight climate change than any previous U.S. legislation.

The Inflation Reduction Act is one of three related laws, passed by Congress and signed by Biden in the remarkably short time of nine months, that will bolster the United States' industries and reshape the country's competitiveness. The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act, signed on August 9, will invest $52.7 billion in the country's semiconductor businesses—which are facing intense competition from Chinese and other Asian companies—and $10 billion in regional innovation and technology hubs. The CHIPS Act also authorizes a significant expansion of use-inspired research at the Department of Energy's Office of Science and at the National Institute of Standards and Technology. And it dramatically (and controversially) enlarges the National Science Foundation's mission by creating a technology and innovation directorate focusing on semiconductors, quantum information systems, artificial intelligence, advanced energy technologies, and other areas in which China has announced its intention to lead. The third piece of legislation, the November 2021 Infrastructure and Jobs Act, features $80 billion in spending on a variety of green technologies (in addition to hundreds of billions of dollars for airports, roads, and trains).

Collectively, these three bills represent a revolutionary change in U.S. industrial policy. The country's critical transition to clean energy will be accelerated in specific technological directions—such as electricity storage, grid modernization, hydrogen fuel, carbon capture and sequestration, electric vehicles, and carbon dioxide removal from the atmosphere and oceans. The clean energy conversion will also speed up industrial infrastructure innovations, including by creating hubs that bring together the demand for and the supply of advanced energy technologies and fuels.

Although these three laws, taken together, represent an audacious step toward enhanced competitiveness, improved supply chain security, and a faster transition to cleaner and more

secure energy, the United States is not guaranteed to successfully meet its industrial and environmental goals. Washington needs a federal industrial policy that is bigger in both scale and scope, but such an expansion is not sufficient. The question is how to get the new industrial policy right considering the country's mixed history with designing and managing commercial innovation initiatives.

Ultimately, the success of industrial policy depends on its implementation, and that is something that remains to be determined. Congress did not organize the bills as a coherent program, so the Biden administration will need to weave them together skillfully to realize a more effective, integrated, and agile economic system that supports innovation from research to deployment. If these initiatives are not implemented well, the United States will waste resources and time—and it does not have the luxury of wasting either.

GROWING CONSENSUS

Since the end of World War II, both the Democratic and the Republican parties have embraced industrial policy—government efforts to seed and shape strategically important parts of the economy—as a way to support a military with global reach. The reasoning is simple: the government is the only customer for weapons systems produced by the military-industrial complex.

But industrial policy for other sectors of the economy has vocal critics, especially some conservatives and academic economists. They argue that governments have poor track records of picking winners and losers, which has led to inefficiency, and that governments should therefore not make policies or create subsidies aimed at influencing the private sector's investment decisions and operations. Such arguments have carried weight. Until 2021, Congress had not passed legislation aimed at strengthening U.S. manufacturing since 2009, when it adopted a stimulus bill to combat the then ongoing recession.

The United States' new industrial policy is not just a response to China.

The recent bipartisan shift to supporting industrial policy is the result of several factors. First and foremost, Beijing's "Made in China 2025" report, released in 2015, laid out

China's plan to surpass the United States in global technical superiority across multiple emerging disciplines, such as artificial intelligence. Policymakers have also grown concerned that the United States is lagging in economic competitiveness, especially in the manufacturing and supply chain areas where China demonstrates increasing strength. For example, China dominates parts of the critical metals and minerals supply chains needed for making numerous clean energy technologies and advanced military hardware. All the recent laws include provisions to slow Chinese successes on this front.

But the new industrial policy is not wholly a response to China. It also stems from a need for aggressive action to address climate change through a massive and rapid clean energy transition. The Biden administration has made transitioning to a net-zero emissions economy by 2050 a priority, and that requires both major innovation and large federal and private-sector investments. Demonstrating and deploying a variety of clean energy technologies across multiple economic domains—transportation and fuels, buildings, industry, electricity—within no more than three decades is realistically required to achieve a net carbon emissions-free economy.

Government policies in these areas, then, should not be decided by abstract economic theories. Instead, they need to be determined by geopolitical and economic circumstances and a commitment to disciplined implementation.

THE RUBBER MEETS THE ROAD

In meeting these challenges, Washington is off to a promising start. The Inflation Reduction Act's spending provisions could help make the United States a world leader in green energy research and technology. So could the Infrastructure and Jobs Act, which funds hubs for carbon capture and hydrogen fuel, among many other promising initiatives. Both laws will also fund the construction of new mineral supply chains, battery manufacturing, and electric vehicle charging stations. They will help keep the country's nuclear power plants online. The CHIPS and Science Act of 2022, meanwhile, directs the National Science Foundation to advance U.S. leadership in the platform technologies that underpin technology innovation across the economy.

Yet these initiatives are still insufficient for reaching the net-zero greenhouse gas emissions goal by the mid-twenty-first century. They consist mostly of carrots when, to meet its challenges, the U.S. economy will also need sticks. The most efficient way to reduce greenhouse gas emissions, for instance, requires charging private firms for their emissions, but the United States has not found a politically acceptable way to introduce substantive emissions pricing. The new climate legislation arguably starts down this path by requiring that certain industries pay a fee for excess methane emissions, but this is far from a comprehensive pricing system. Instead, in contrast to the European Union's initiatives, U.S. climate policy continues to rely mostly on more popular supply-side subsidies, which will not be enough to quickly move the country to low emissions on an economy-wide scale. Achieving net zero will also require difficult import and export border adjustment charges on trade.

Washington must carefully monitor the impact its policies have on different social groups

The laws, however, do lay out some positive steps forward for industrial policy implementation. The Infrastructure and Jobs Act authorizes the Department of Energy to establish a new Office of Clean Energy Demonstrations (OCED) that will "coordinate activities relating to the selection, project management, and assessment of" demonstration projects. These might include creating next-generation nuclear power plants designed to avoid a reactor or nuclear fuel meltdown if they lose coolant; large-scale carbon dioxide capture systems; long-term energy storage units; and more—demonstrations for which it is often difficult to attract sufficient private capital at the outset.

The Department of Energy used its executive authority to dedicate one of its three undersecretary positions to clean energy technology demonstration and deployment, making the office responsible for setting up the OCED, the loan program for clean energy deployment, and more of the department's considerable Infrastructure and Jobs Act and Inflation Reduction Act portfolio. These are welcome developments, but again, their implementation is key to success: the OCED must establish clear authority, be able to attract an experienced and capable staff, and have the flexibility to pursue projects based on private-sector practices rather than restrictive federal procurement regulations.

The federal government must also develop implementation plans for the new laws that go beyond the purview of an additional Department of Energy office. Large appropriations and well-intentioned plans are not enough, and to date, neither the laws nor the Biden administration's strategies adequately address the issue of integrated implementation. The administration must set technical milestones, cost goals, and time schedules for every major program to achieve net-zero emissions. It will need to fund measurements, modeling, and simulations so that policymakers and staffers can evaluate each initiative's progress and look at possible alternatives. It will have to periodically adjust targets, such as for electric vehicle market penetration, rather than sticking to preset aspirational goals. To better manage each initiative and ensure that it is operating efficiently, the federal government will also need to fully integrate information systems that collect and analyze data relevant to companies, investors, policymakers, entrepreneurs, and other major stakeholders in the U.S. economy. This is not business as usual for the federal government.

The White House and Congress must also create a stable policy environment for these new programs, since initiatives are easiest to carry out and most likely to receive private investment when the rules regarding them are lasting and predictable. Such stability has not been a hallmark of federal or state government behavior. To help maintain consistency, Congress could create a joint committee that oversees all energy, climate, and associated innovation efforts. This would require a major transformation of how Congress does its business, given that committees routinely protect their prerogatives. But although the prospects for such a step are not great, they nevertheless deserve discussion when the U.S. government confronts a task as daunting as rapidly transitioning the massive energy economy to cleaner sources.

COME TOGETHER

These implementation measures are only a partial list. All the above measures must be addressed—and quite possibly more. For example, the United States should work in closer collaboration with its allies and trading partners, in some cases through formal cooperative efforts.

Finally, Washington must keep in mind that the economic transformation it envisions in the energy sector will influence the lives of all Americans. It must carefully monitor the

impact its policies have on different social groups, communities, and regions. If the country's industrial policy is carried out haphazardly, it could hurt many of the people it is designed to help, while wasting time and resources. But done right, these new measures could make the United States a more competitive and greener country, helping it lead the world for decades to come.

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