Insight

Opportunities for Energy Technology Abroad

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Executive Summary

- Climate change is a global problem that will require the distribution of innovative clean-energy technologies around the world.
- The United States has a number of programs to support the export of technologies, but trade barriers make it difficult for U.S. companies to compete around the globe.
- The United States should pursue a level playing field that allows robust competition and promotes innovation rather than subsidize its exports as China does.

Introduction

President-elect Biden has signaled that climate change will be the paramount policy issue of his administration. While much of the focus will be on domestic initiatives, climate change is fundamentally a global issue. Over the next 20 years, developing countries across the Indo-Pacific are projected to see growth in greenhouse gas emissions as well as two-thirds of global energy growth.[1] Efforts to mitigate the impact of climate change will require increased investment in clean energy technology adoption, such as renewable resources and electric vehicles, across the entire globe.[2]

The United States has an array of institutions intended to level the international playing field and allow U.S. exports of consumer and investment goods to be driven by market forces. These institutions are poised to play a significant role in climate policy by permitting the clean energy technologies of U.S. firms to contribute to emissions abatement globally and not merely in the domestic market. Simultaneously, the removal of trade barriers that hinder U.S. manufacturers from effectively competing in the global marketplace will also prove beneficial in addressing climate change.

In what follows, this study briefly surveys the relevant government institutions and trade policies. It then closes by contrasting this market-oriented approach with the aggressive, centralized-government efforts epitomized by China. Government aid programs are necessary, but they are no substitute to sound trade policies that promote competition and allow the export of U.S. innovations around the globe.

U.S. Export-related Institutions

The United States has many institutions that can influence energy-sector development abroad. While some agencies' programming is relevant to individual energy developers, i.e. firms that construct and operate energy infrastructure, others affect manufacturers of energy products, such as solar photovoltaics or advanced nuclear. The following provides an overview of each agency's activities using data provided by each agency.

U.S. International Development Finance Corporation

The Development Finance Corporation (DFC) partners with private industry to provide both debt and equity financing in the developing world, as well as political risk insurance. DFC may provide equity financing on a project-specific basis for projects in developing nations in an effort to advance U.S. foreign policy. In addition, the DFC finances investment funds to help developing countries overcome limited access to private equity capital.[3] From fiscal year (FY) 2013 to FY2018, DFC committed $7.85 billion of its portfolio to financing or insuring energy development.

Export-Import Bank of the United States

The Export-Import Bank of the United States (EXIM) is the official export credit agency of the United States with a mission of supporting American jobs by facilitating the export of U.S. goods and services. EXIM provides direct loans as well as loan guarantees with various terms, structured financing, export credit insurance, and finance leasing. Through its loan guarantee offering, EXIM guarantees payment of loans issued by banks to foreign buyers to purchase U.S. goods and services. Similarly, finance leasing allows EXIM to extend the ability to lease U.S. products to international lessees.[4] Broadly, at least five percent of EXIM's financing authority will be made available each fiscal year for the financing of renewable-energy, energy-efficiency, and energy-storage technology exports, according to the legislation that reauthorized the agency in FY2020.[5]

The financing provided in support of energy exports at EXIM was relatively low during the past five years. While total renewable-energy authorizations were about $200 million in 2014, authorizations declined dramatically in the following years to as low as $5.32 million in 2018 due to a lack of quorum at the agency. With a quorum in effect as of 2019, the total authorizations grew to $18.9 million, and moving forward the commissioners will be able to approve more long-term funding opportunities.[6] Since FY2013, EXIM disbursed $3.16 billion as insurance, loans, guarantees, and working capital to support energy development.

U.S. Agency for International Development

The programming at the United States Agency for International Development (USAID) supports the development of energy infrastructure and markets to promote economic growth as part of its broader humanitarian mission. USAID has committed to or disbursed $5.1 billion in grants since FY2013 specifically dedicated to energy development. USAID's funding aims to improve infrastructure in areas that may otherwise have difficulty attracting the investment and expertise necessary to modernize, such as southeast Asia and eastern Europe.

Other Agencies

The Department of Energy's (DOE) Office of International Affairs (OIA) provides technical and managerial training, as well as assistance in developing energy policy and administrative management programs to foreign governments. Since FY2015, OIA has disbursed $27.6 million, while DOE has spent over $2.8 billion in its mission to secure nuclear fuel and prevent nuclear proliferation, largely through the National Nuclear Security Administration.

The Trade and Development Agency (TDA) aids U.S. companies in exporting goods and services by pairing them with developers completing development projects in emerging economies. Through its grants, TDA

provides funds for studies and analyses that determine project feasibility and the suitability of U.S. products abroad.[7] Since FY2015, TDA committed to or disbursed $220 million in the form of grants to support energy development.

Collectively, the various agencies provide a wide range of different programs. In total, the DOE, USAID, EXIM, DFC, and TDA have spent over $19 billion since 2013. Some agencies, however, only provide data since fiscal year 2015, suggesting the value is likely higher.

Simply by virtue of the targeted nature of their programs, these agencies focus on helping individual companies. As a result, the agencies are in the business of choosing winners and losers, regardless of whether they are relying on U.S. companies to apply to participate in programming or acting as matchmakers for foreign governments. Their programming can aid individual companies in securing sales abroad, but it fails to remove barriers created by regulations and trade policies that impact whole industries. As a result, their impact on competition is necessarily limited.

Trade Barriers

Trade barriers such as tariffs and export controls hinder the export of energy technology produced in the United States. Tariffs instituted by the Trump Administration have driven up the price of consumer and producer goods and have ultimately inhibited economic growth. Tariffs were imposed on goods based on their country of origin, such as China, or based on the type of good, such as aluminum or steel. In both cases, the intermediate goods subject to the tariff serve as a component of a final product or service in the United States, where the cost of the tariff is passed on to the consumer. Tariffs impacted the price of imported products used throughout the energy sector including battery storage, electric distribution, pipelines, electric vehicles, hydropower, and nuclear power. The imposition of U.S tariffs on foreign-made goods also sparked retaliatory tariffs on U.S.-made goods that directly hindered the export of U.S. made items, including renewable-energy products. In 2018, the Trump Administration imposed a 30 percent tariff on solar modules and cells that resulted in retaliation by Korea and Japan. The administration provided an exemption on 2.5 gigawatts of cell imports due to a lack of manufacturing capability in the United States that would otherwise threaten the existence of domestic companies, highlighting the reliance on foreign intermediate good.[8]

Export controls, on the other hand, impose a review process on domestic sellers of particular goods, as determined by regulations imposed by five agencies, including the DOE and Nuclear Regulatory Commission (NRC). The NRC, for example, requires licensing for the sale of nuclear reactors, their components, and equipment designed for use in reactors.[9] This process delays the ability to sell products abroad due to various national security and market concerns. In particular, this review process creates barriers to the deployment of advanced nuclear technology abroad, which is safer than predecessor technologies that existed when export controls were created.

Modifying the policies that govern both imports and exports would support the exports of U.S. technologies abroad. By removing tariffs, the price of technology dependent on imported intermediate goods manufactured in the United States would be reduced and may lead foreign governments to end retaliatory tariffs, furthering domestic manufacturers' ability to compete. Similarly, modifying export controls to reduce the extent of reviews could reduce regulatory costs and perceived risk, and thus the final price. As a result, U.S. products would be more competitive abroad and more accessible to the developing world.

China and Distortions in the Global Energy Market

The development of policies that improve competition in the global marketplace will spur greater innovation to mitigate climate change. Unfortunately, China has a significant presence in the relevant global markets and a distorting, non-market approach to international policies that mutes the beneficial influence of market forces.

China leads globally in the production of solar, wind-turbine, and battery technology. China produced over 70 percent of the global supply of solar photovoltaics in 2019. It is also home to nearly 75 percent of lithium-ion battery cell manufacturing capacity, and in 2018, was home to over a third of the world's wind-turbine manufacturers.[10] Goldwind, a Chinese manufacturer, had 13.7 percent of global wind turbine market share in 2018, second only to Vestas, a Danish manufacturer. By comparison, GE Renewables, a U.S. manufacturer, ranked fourth with 9.9 percent of global market share.[11]

The Chinese government invests abroad heavily and subsidizes the proliferation of its energy industry on a project-by-project basis. The China Development Bank (CDB) and the Export-Import Bank of China have demonstrated the ability to provide as much energy financing as all multilateral development banks, such as the World Bank, combined.[12] China's willingness to finance projects that are unlikely to succeed, or that others are unwilling to finance, such as coal power plants, have made China a lender of last resort.

According to the American Enterprise Institute, China has invested in or constructed 639 energy projects abroad at a cost of $426 billion since 2013. Perhaps more important, 64 percent, or $154 billion, of the spending is associated with fossil fuel projects.[13]

These policies harm the effort to confront climate change in two ways. The projects themselves directly undermine global efforts to decarbonize. They also distort clean energy markets and place government dictates above market forces. For example, China has succeeded in pressuring the Argentinian government to construct two dams with a total projected capacity of 1310 megawatts on the Santa Cruz River in Patagonia. The project would be funded by a $4.7 billion CDB loan. The government of Argentina proceeded with the dams' construction due to a clause included by CDB wherein loans for other infrastructure projects in Argentina were conditional on the approval of the dams. Thus, although the former Argentinian president Mauricio Macri was initially against the dam approved by his predecessor, his hands were all but tied due to the clause.[14] By utilizing its energy investments as leverage, China's influence over foreign governments has grown and it has succeeded in undermining competition in the market.

Conclusion

Simply trying to match China's efforts abroad by subsidizing energy infrastructure will fail to create a competitive marketplace where technological advances flourish over the long term and drive effective efforts to address climate change. Further reliance on existing foreign assistance programs will simply continue helping a few companies rather than opening doors for whole industries. Instead, changes to trade policy are necessary to for the U.S. energy sector to compete globally.

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[2] https://www.greentechmedia.com/articles/read/global-renewable-energy-investment

[3] https://www.dfc.gov/what-we-offer/our-products

[4] https://www.exim.gov/

[5] https://www.exim.gov/sites/default/files/reports/competitiveness_reports/2019/EXIM_2019_CompetitivenessReport_FI

[6] https://www.exim.gov/sites/default/files/reports/competitiveness_reports/2019/EXIM_2019_CompetitivenessReport_FI

[7] https://ustda.gov/about/

[8] https://www.pv-magazine.com/2018/04/09/korea-japan-to-retaliate-over-u-s-solar-tariffs/; https://www.pv-magazine.com/2018/01/23/trump-levies-graduated-tariffs-starting-at-30-exempts-2-5-gw-in-cells/

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