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A US manufacturing renaissance: onshoring the green energy supply chain

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US trade policy, a slew of demand and supply-side tax credits, and federal loans and grant programmes, which are designed to support the onshoring of semiconductor and green energy manufacturing capabilities, are driving a wave of new investments in the US.

Building and capitalising projects in this rapidly evolving asset class requires consideration of the current subsidy regime, the sources of capital available to these projects, as well as the contracting structures

and revenue sources available to be leveraged.

According to industry sources, in the past two years, a total of 303 US green energy manufacturing projects have been announced, investment in US manufacturing of clean energy and transportation technologies more than quadrupled to a total of \$89bn, US construction spending on new green energy manufacturing facilities more than doubled, and the pipeline of new clean energy and transportation manufacturing investment

increased by 21 percent to a total of \$125bn.

The US is now estimated by industry associations to be the third-largest solar module producer in the world, with 50GW of domestic solar module production capacity and more than 80GW of solar tracker manufacturing capacity. Further plans were announced for another 56GW of new solar cell production, 24GW of new wafer production and 13GW of new ingots production. The US Department of Commerce projects

that the US will manufacture nearly 30 percent of the world's leading-edge chips by 2032.

Current figures suggest that, as of September 2024, 20 of the largest US manufacturing projects announced since August 2022 were on track for completion by 2028, with more than half of those projects due for completion before the end of 2026.

This is a dramatic change from just a few years ago when the US was reported to have only 7GW of domestic module manufacturing capacity, 41 metric tons of polysilicon manufacturing capacity, some inverter and racking manufacturing, no domestic manufacturing of other key upstream solar inputs and 0 percent of the world's leading-edge chips manufacturing.

Key drivers

The US manufacturing renaissance is being propelled by three key policy drivers: (i) robust trade restrictions aimed at securing a domestic supply chain in strategic industries; (ii) federal income tax credits that bolster both the demand and supply of these new manufacturing capabilities; and (iii) federal loan and grant programmes that provide low-cost capital to a wide range of manufacturing facilities in strategic industries.

In addition, the introduction of US trade restrictions and tariffs over the past five years has made Chinese manufactured green energy components subject to the risk of detention, delays and increased costs, leaving developers of domestic US green energy projects looking for domestically sourced alternatives.

As widely reported, the enforcement of the restrictions on imports under the Uyghur Forced Labor Prevention Act, which aimed to address human rights violations stemming from concerns regarding the use of forced labour by ethnic minorities in the supply chains of goods imported into the US, has resulted in the detention of solar panels suspected to contain Xinjiang silicon by US Customs and Border Protection and the introduction of new traceability standards by the Solar Energy Industries Association.

Tariffs imposed under section 301 of the Trade Act of 1974, designed to counteract a foreign country's unfair or discriminatory trade practices, apply to certain imported Chinese components and increase the costs of those components. These tariffs were further increased on 1 January 2025, with a 50 percent tariff rate now applicable to imported Chinese solar modules, solar cells, polysilicon, wafers and semiconductors, and a 25 percent tariff rate that now applies, or will shortly apply, to battery parts.

Tariffs imposed under section 201 of the Trade Act, which are aimed at providing relief to domestic industries that have been injured by increased imports, apply to Chinese solar energy equipment imports and increase the costs of those components with a 14 percent tariff rate applicable from 7 February 2025 to 6 February 2026.

Anti-dumping and countervailing duties have also been threatened against certain companies to



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address concerns that section 201 solar tariffs were being circumvented by companies in Southeast Asia.

The Inflation Reduction Act (IRA) and the Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS Act) were enacted in August 2022. A major goal of this legislation was to build a US green energy manufacturing industry to benefit American workers and reduce reliance on imported components. The legislation therefore seeks to increase demand for domestically produced components and subsidises the costs of production by offering tax credits to the manufacturers and users of domestically manufactured components.

The IRA incentivises green energy projects to incorporate domestic components by offering a 10 percent tax credit bonus, known as the domestic content bonus credit. This bonus credit applies widely to wind, solar, battery and other renewable technologies.

On the supply side, the IRA established the manufacturing production tax credit pursuant to section 45X of the Internal Revenue Code, which is designed to incentivise taxpayers to produce eligible solar, wind and battery components, subcomponents and precursors in the US.

For certain components, including battery modules, the credit is calculated based on the number of 'eligible components' produced and sold to third parties,

multiplied by a per-unit amount. For other components, including electrode active materials and critical minerals, the tax credit is calculated based on a percentage of production costs of 'eligible components'.

The CHIPS Act established the advanced manufacturing investment credit pursuant to section 48D of the Internal Revenue Code, which is designed to incentivise taxpayers to invest in advanced manufacturing facilities, defined in the statute as a facility for which the primary purpose is the manufacturing of semiconductors or semiconductor manufacturing equipment. The credit is equal to 25 percent of the qualified investment in an advanced manufacturing facility.

In addition to tax subsidies and incentives, clean energy manufacturing projects may also be eligible for a range of different government-supplied low interest loans, loan guarantees and grants. These programmes provide low-cost capital for projects that may not be able to obtain traditional commercial bank financing.

The IRA greatly expanded the lending authority of the US Department of Energy (DOE) Loan Programs Office (LPO) under the Loan Guarantee Program under Title XVII of the Energy Policy Act of 2005 for projects that support clean energy deployment. As of September 2024, the Loan Programs Office estimated that it has financed US clean energy projects and advanced technology

vehicle manufacturing facilities valued at \$43.9bn.

Likewise, the CHIPS Act provided additional programmes for loans, loan guarantees and grants. As of 22 January 2025, the CHIPS Program Office (CPO) had announced \$32.5bn in grant awards and up to \$5.5bn in loans to 32 companies across 48 projects in 23 states.

Available capital structures for financing

Most new manufacturing facilities in the US are capitalised through a combination of equity, debt and, where applicable, the federal loans, loan guarantees and grants programmes, with a significant source of repayment being the value of federal income tax credits.

Debt and structured equity investments can provide a lower cost of capital than traditional equity, and lenders and investors in this space are increasingly able to consider these manufacturing facilities in the same way as other project-financed transactions, based on the projected cashflows from offtake arrangements for the manufactured products and the value of future tax credits.

To de-risk these projects and obtain the most favourable terms and pricing, developers often execute fixed-price construction contracts, lock in supply contracts for the raw material consumables required for the manufacturing process and enter long-term contracted offtake arrangements for the manufactured products with

reputable buyers, providers and installers of those products.

While the terms of these offtake arrangements and the credit given to them vary, lenders and investors ultimately require a creditworthy third party committed to purchasing the manufactured products at a fixed price for a period of time that allows for amortisation of the debt or equity investment, an assumption that there will be a market for merchant sales of the manufactured products, and clear visibility into the value and monetisation pathways for the tax credits.

Political risks and the future of onshoring

In light of the uncertainty about a pullback in clean energy tax

credits loan and grant programmes under the Trump administration, the value of new clean energy-related factories and other projects announced in January 2025 dropped to just \$176m.

This was only the fourth time that monthly investments in new projects did not reach at least \$1bn since E2, a national, nonpartisan advocacy group for policies that improve the economy and protect the environment, began tracking such projects in its Clean Economy Works tracker in August 2022. January 2025's value is also by far the lowest monthly total during that period.

However, irrespective of political affiliations, for many Americans reinvigorating domestic manufacturing,

reducing dependence on foreign-sourced imported components and reshoring manufacturing capabilities in strategic industries are important priorities and appear to align with the policy goals of the new administration. ■

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