Strengthening US domestic clean energy production is key to reducing tariff shocks

The impact of the latest tariffs is likely to be greater for US wind than solar or battery storage, but manufacturers across clean technologies will feel raw material cost increases. The Inflation Reduction Act (IRA) is meaningful in helping to dampen some tariff disruptions and strengthening domestic supply chains

While some clean industries will be able handle the new tariffs better than others, overall cost increases are going to be largely unavoidable

The Trump administration's 25% tariffs on imported Canadian and Mexican goods have come into effect, with the exception of a lower 10% tariff on energy products from Canada. These new tariffs are being implemented alongside the additional 10% tariff on Chinese imports, and on top of the 10% additional tariff effective in February. Tariffs will hit US clean energy subsectors differently. While the direct impact on the solar and battery storage industries is expected to be moderate, the wind industry is likely to feel more pain. Let's start there.

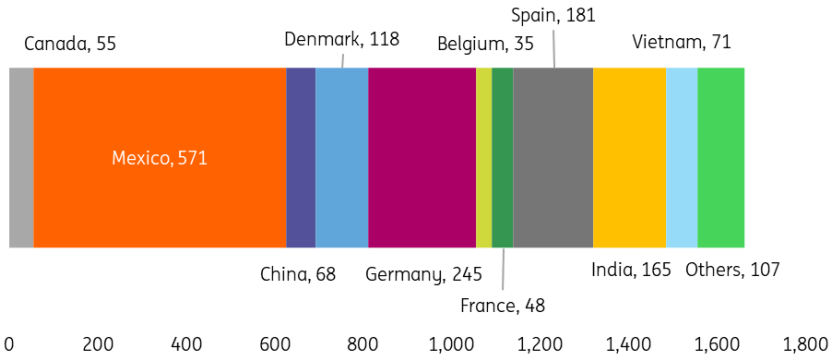
Wind would see disruption on 40% of related imports

The new tariffs will drive up the cost of wind manufacturing. Despite a decrease in total wind-related import value from a 2020 high, the US wind industry remains dependent on imports from

Mexico, Canada and China. The US imported almost $700m of wind equipment from these three countries, with Mexico's lone contribution climbing in recent years to 34% of the total.

US imports of wind-related equipment by origin (2023)

$m



Note: Wind-related equipment includes towers, generators and generator parts, blades, and hubs. Source: US Department of Energy, Lawrence Berkeley National Laboratory, ING Research

More disruptively, most of the imported wind equipment from Mexico is made up of wind blades and hubs, which the US relies on the most. In fact, US blade production capacity tumbled from almost 10GW to less than 5GW annually in the past few years, while its tower and nacelle production capacity has increased and remained relatively constant. Accordingly, the domestic content of blades is estimated to be at 25% or below in recent years, in stark contrast to the 70-85% for the rest of the wind manufacturing parts.

> *With at least $700m of wind equipment imports subject to tariffs now, wind manufacturers can see their costs rise*

This suggests that with at least $700m of wind equipment imports subject to tariffs now, wind manufacturers could see their costs rise – especially those relying on Mexican blades. Wood McKenzie estimates a 7% increase in onshore wind turbine costs, and although this is not a high absolute value, it can have a meaningful impact on turbines manufactured in the US. IRA tax credits can act as a cushion, and eventually, the domestic bonus requirements would encourage more domestic manufacturing capacity buildout (provided that the tax credits are not cancelled by Congress).

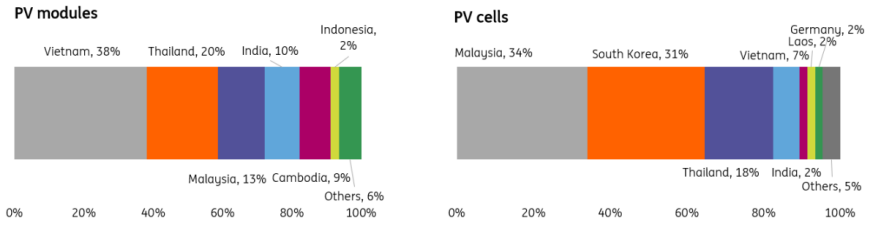
> *IRA tax credits can act as a cushion*

Solar supply chain remains largely intact

In contrast, the impact of new tariffs on US solar should be limited, as the industry is already heavily tariffed. The over-300% tariff on Chinese solar equipment has over the years slashed US imports from China to almost zero. And the US does not have significant imports of solar equipment from Mexico and Canada.

The US has been importing most of its solar equipment from southeast Asia, where China has had an increasing manufacturing footprint. The previous Biden administration's solar tariffs on four southeast Asian countries led China to re-route its trade within the region. President Donald Trump could eventually put solar tariffs on more southeast Asian countries, but until then, most of the US' solar supply chain can expect to stay relatively unshaken.

US imports of solar supply by origin (2024)



Source: Bloomberg New Energy Finance, ING Research

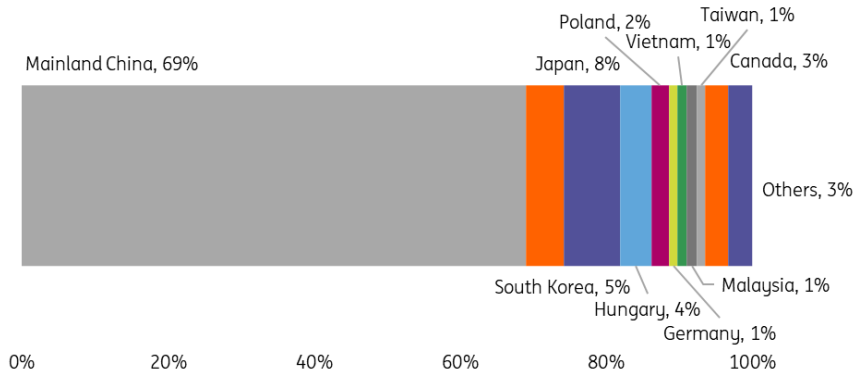
One might wonder to what extent US domestic solar production is better placed after the IRA to absorb trade shocks. The result so far is encouraging. The US Solar Energy Industries Association reported that the US domestic solar manufacturing capacity had reached 50GW by 2024, matching US annual demand. That assumes manufacturers produce at full capacity. And while numbers may vary, one forecast from Bloomberg New Energy Finance (BNEF) estimates that half of the US solar module demand will come from within the US, and half will be imported.

Battery storage stays resilient due to cheap imports

US battery manufacturing should also be able to absorb the tariff hikes – not because the US is not exposed to these new tariffs, but more because import costs remain low.

The US batteries market is highly dependent on Chinese imports. In 2024, 70% of the lithium-ion battery imports to the US was from mainland China. Chinese batteries were already a tariff target under the Biden administration, and now all the tariffs have stacked up to 48.4% for lithium-ion batteries for electric vehicles (EVs), and 30.9% for all other lithium-ion batteries.

US imports of lithium-ion batteries by origin (2024)



Source: Bloomberg New Energy Finance, ING Research

The new tariffs on Chinese imports could result in a 5% cost increase of four-hour batteries imported from the country, according to BNEF. But the increased cost would still be about 9% cheaper than US-produced batteries (even with the IRA's tax credit domestic content bonus included). In turn, Chinese battery exports would remain attractively priced for Americans.

Nonetheless, battery storage is the area where we see the most potential future domestic production increases. IRA-spurred clean investment has been most concentrated in battery manufacturing, and as a result, US capacity tripled between 2021 and 2023 and could potentially have had another 89% year-on-year increase from 2023-2024 if all planned domestic capacity were to be realised. Consequently, the US can now meet 60GWh of its current 200GWh of battery demand with domestic capacity. This trend would structurally reduce US exposure to Chinese tariffs. It also emphasises the importance of the continuation of the IRA, as it helps bring the cost of US battery production closer to Chinese levels.

> *This trend would structurally reduce the US' exposure to Chinese tariffs*

Manufacturers will face broad pressure from raw materials and more

One important factor to note is that manufacturers in the US can absolutely expect to feel cost increases from raw materials. For instance, Canada supplies about 20% of the US import of cobalt, a metal import used in battery manufacturing. Additionally, the US is set to impose a 25% tariff on all imported aluminum and steel, which can have a material impact on wind and solar manufacturing. Steel makes up 66-79% of a wind turbine's mass, and 25% of steel used in the US is imported. In addition, both aluminum and steel are used in solar panels.

Furthermore, as 48% of US imports of high-voltage transformers are from Mexico and Canada, the new tariffs would drive up the cost of power transmission. This could then affect power plants, and by extension clean power manufacturers. This adds more complication to the grid at a time when

the US power system is already under pressure to effectively manage the rapid power demand growth, primarily from the adoption of artificial intelligence.

All in all, although some clean industries can handle the new tariffs better than others, overall cost increases are largely unavoidable. Short-term solutions to those more affected include supply chain partnership renegotiations, as well as further trade re-routes. These short-term disruptions, however, would have a limited effect on the long-term development of US clean technologies, as the country continues to build up its US domestic supply chains. A continuation of IRA tax credits remains instrumental in making this process happen faster.

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