What does it mean to have up to 3,521% US tariffs on solar imports?

Solar tariffs on four Southeast Asian countries could shock the US solar industry, potentially making imports and domestic manufacturing more expensive. In a higher-for-longer tariff environment, how the industry future-proofs its supply chain will set the stage for the longer-term outlook

The US has announced stiff solar panel tariffs on four Southeast Asian countries

New solar tariff rates fly off the chart

The US Department of Commerce published its final anti-dumping and countervailing duty tariff rates against solar PV (crystalline photovoltaic) related imports from four Southeast Asian countries. Tariff rates vary by country and company, but they're as high as a prodigious 3,521% for Cambodia, 972% for Thailand, 814% for Vietnam, and 250% for Malaysia.

The trade tensions on solar imports from Southeast Asia aren't new. After the over-300% tariff on Chinese solar products reduced US solar imports from China to nearly zero, the country seemingly ramped up manufacturing capacity in these four countries to get their products into the US. In May 2024, the Biden administration ended a two-year delay in new solar tariffs on these four countries, followed by more investigations into unfair dumping and government subsidies. Final investigation results were published this week, with the US countermeasure rates at a much higher level than in

the preliminary findings. These new tariffs are pending ratification by the US International Trade Commission on 2 June.

These anti-dumping and countervailing measures are separate from others applied to solar imports, such as Liberation Day tariffs (which are paused for 90 days) and Section 201 solar tariffs, which were announced during President Trump's first term and extended under Biden. All in all, solar tariffs on these four countries can be as high as 3,570%.

Summary of tariffs applied to solar imports

%

	Anti-dumping + countervailing duties	April 2 Liberation Day tariffs	Section 201 solar tariffs	Total
Cambodia	651.85 - 3,521.14	49	0	700.85 - 3,570.14
Malaysia	14.64 - 250.04	24	14	52.64 - 288.04
Thailand	375.19 - 972.23	36	14	425.19 - 1,022.23
Vietnam	120.69 - 813.92	46	14	180.69 - 873.92

Source: US Department of Commerce, ING Research

US domestic solar manufacturing has jumped, but the story isn't that simple

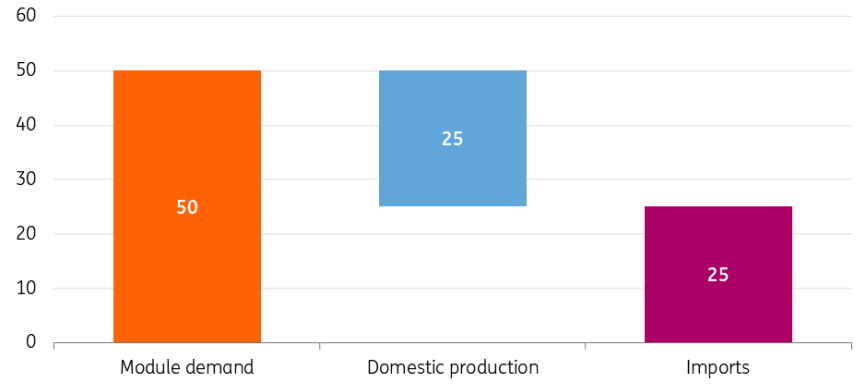
We've been arguing that the US solar industry does have buffers to some extent to mitigate tariff disruptions. These include: 1) preemptive hoarding by US manufacturers to increase inventory ahead of tariff implementation; 2) tax credits from the Inflation Reduction Act to uphold revenue streams; and 3) higher domestic solar manufacturing for solar plants to use 'made-in-America' supply.

The US domestic solar manufacturing capacity increased substantially over the past few years. In a report earlier this year, the Solar Energy Industries Association and Wood Mackenzie suggested that the US module manufacturing capacity had grown from just 14.5 GW in 2023 to 42.1 GW in 2024 and over 50 GW in early 2025. That level is on par with solar module demand in the US.

However, these numbers are based on a major assumption—that manufacturers produce at full capacity. Their real capacity is likely far lower. One analysis from Bloomberg New Energy Finance estimates that half of the US solar module demand will come from within the country, with the other half needing to be imported.

Estimated US solar module demand and supply in 2025

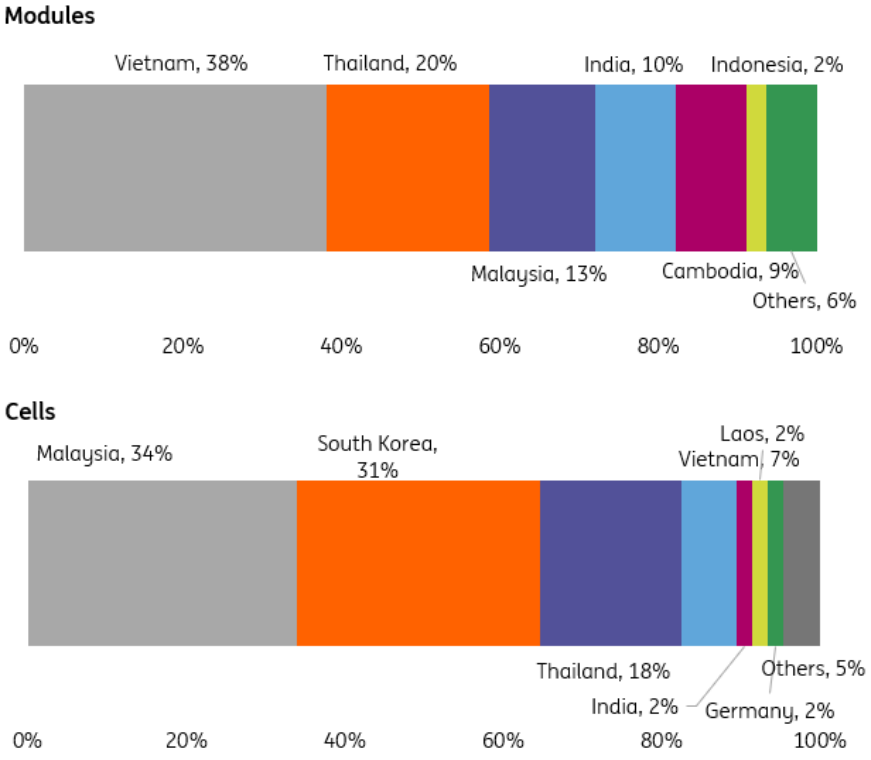
GW



Source: Bloomberg New Energy Finance, ING Research

This shows that the domestic manufacturing buffer is not strong enough. On top of that, the inventory buffer is only temporary. As a result, tariffs can still have a substantial impact on the US solar industry, especially those targeting these four Southeast Asian countries. A combined 80% of US solar PV module imports are from Cambodia, Malaysia, Thailand, and Vietnam, and a little less than 60% of US PV cell imports are from these nations.

US solar product imports by origin



Source: Bloomberg New Energy Finance, ING Research

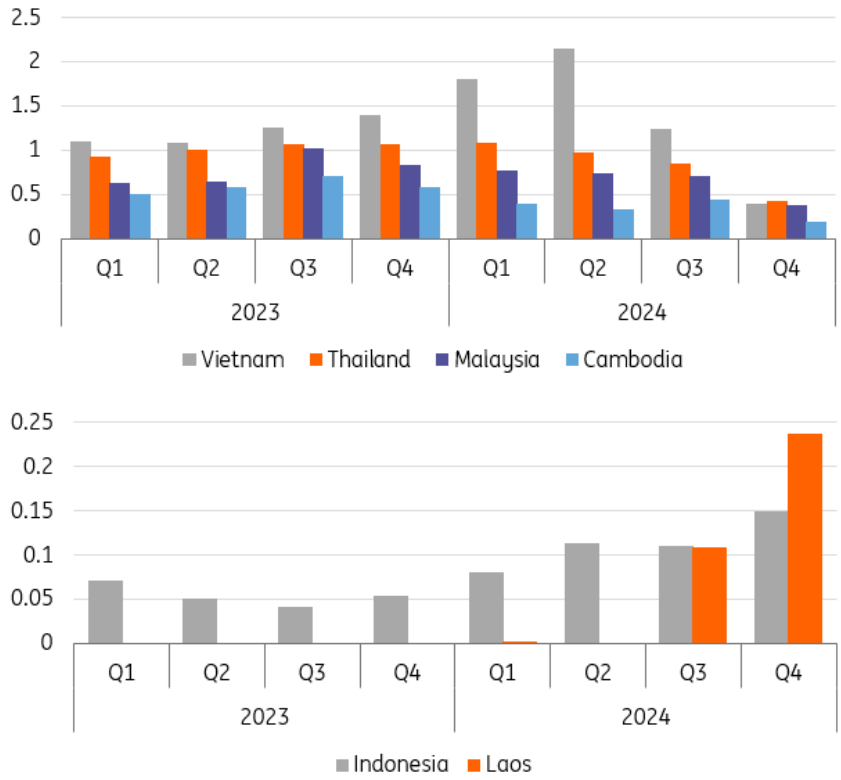
Moreover, US domestic solar manufacturing can be impacted by tariffs, too. Although the US' PV module manufacturing capacity soared in recent years, its cell manufacturing capacity remains low. Last year, cell manufacturing was reportedly reshored for the first time in five years, with several production sites expected to start US operations in 2025. For the US to further increase module manufacturing capacity, it would need to import more cells, and Southeast Asia is a major exporter of the product. Much higher cell import prices can make domestic assembly (into modules) more expensive.

More cat-and-mouse games between US and Southeast Asia?

Trade reroutes, even within Southeast Asia, are happening because of tariffs. After Biden ended the previously mentioned tariff exemption period a year ago, US solar imports from Cambodia, Malaysia, Thailand, and Vietnam decreased, despite the share of imported values from these countries remaining high. Meanwhile, there were increases in US solar imports from Laos and Indonesia, reflecting China's effort to further reroute trade and circumvent higher tariffs.

Value of US imports of solar PV cells and modules

$bn



Source: Bloomberg News, ING Research

So we are almost looking at a cat-and-mouse game, where solar trades find new paths as US tariff policy evolves. There are several watchpoints here. First, it remains to be seen whether and when the US will start investigating other countries like Indonesia and Laos. The timeline would not be short, as solar import shares from both countries are still low. Production and exports would need to be further ramped up before investigations kick in.

Second, it's worth monitoring whether US solar companies will turn to other countries such as South Korea. The country supplies about 30% of US solar PV cell imports, just several percentage points behind Malaysia. As an established supplier with lower tariffs, Korea could potentially receive more orders from the US.

In either case, Cambodia, Malaysia, Thailand, and Vietnam would be the losers of this new tariff measure, likely seeing lower demand for their solar products and hence reduced manufacturing.

US solar industry must future-proof itself amid tariff disruptions

As Trump is fully committed to using tariffs as part of his policy agenda, the solar industry in the US would need to prepare for a higher-for-longer tariff environment.

A resilient supply chain for US solar companies can be either international or domestic, but there are challenges to both. Internationally, producers would need to forge new partnerships, possibly with suppliers in countries where the US tariff policy is more stable. However, that will not be an easy task when China still controls more than 80% of global solar manufacturing.

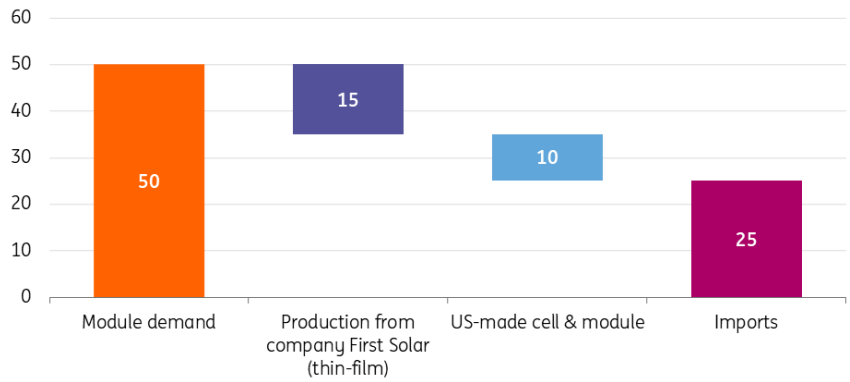
Domestically, crystalline solar module manufacturing would increase, but at a higher cost, mainly due to higher cell import prices. The US would eventually need to enhance domestic manufacturing in other steps of the supply chain, including cells and wafers.

Another bright spot for the US solar industry lies in thin film PVs. There are two commonly used types of solar PVs: crystalline (including monocrystalline and polycrystalline) and thin film. Crystalline PVs use crystalline silicon as the sun-absorbing material and involve assembling wafers into cells and then modules. Thin film PVs use materials like cadmium telluride and typically can conduct all steps of production within one facility.

Thin film PVs have several advantages from a geopolitical perspective. Not only does the US already have 15 GW of production capacity (out of the total 25 GW), but thin film PVs are also not targeted in the new anti-dumping, countervailing, and Section 201 tariffs. We can expect the manufacturing and role of thin film PVs in the US to grow further.

Further breakdown of US solar module demand and supply in 2025

GW



Source: Bloomberg New Energy Finance, ING Research

All in all, the US solar industry does have some cushions against tariffs now, but how it strengthens and future-proofs its supply chain will set the stage for the longer-term outlook.

Policy disruptions from tariffs, combined with the Trump administration's energy policy strategy for deregulation and energy dominance, can extend the life of fossil-fuel-based activities and slowdown the energy transition. But the trajectory of the energy transition would not change in the US, with numerous clean energy businesses and investment commitments expected to persist.

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