

## Making solar a source of EU energy security

In 2022, [most](#) global renewable power growth will consist of photovoltaic (PV) solar energy. In its 2021 industrial strategy, the European Commission acknowledged the need for a more strategic approach to renewable energies. As Member States seek to diversify away from Russian fossil fuels following the invasion of Ukraine, they should avoid exacerbating dependencies on solar panels manufactured in China.

### Europe's solar dependency on China

By 2008, China emerged as the dominant producer of solar PV panels. By 2012, it accounted for 64 % of worldwide production and, as of 2017, eight of the top 10 solar manufacturers were Chinese, supplying approximately [three quarters](#) of global solar PV panels. What enabled this unprecedented surge, at least to some extent, was a [75 % decline](#) in production costs among China's PV manufacturers. The swift price decrease, prompted by cost reductions in combination with alleged state subsidies, allowed Chinese PV manufacturers to [outcompete](#) their European and North American counterparts, driving them into bankruptcy. In addition, China has come to dominate the supply of polysilicon, mostly sourced in Xinjiang, which is a critical building block of silicon-based PV panels, with a global production share of 66 % in 2019.

However, China has not always dominated the solar PV supply chain, and Europe had been the frontrunner in the 'solar revolution'. In 2007, [30 %](#) of PV manufacturing was still located in Europe. In an attempt to protect the industry, the European Commission, in 2013, proposed a phased [anti-dumping tariff](#) on solar PV panels imported from China. In a nine-month investigation launched in September 2012, the Commission found that Chinese companies were selling solar panels to Europe at nearly [half](#) their normal market value and were receiving [illegal subsidies](#). Proposing duties up to 64.9 %, the Commission's anti-dumping and anti-subsidy investigation was valued at more than €20 billion and became the [largest](#) EU-China trade dispute so far. The measures were aborted following Chinese threats to retaliate with tariffs on French wine and German cars.

Currently, Europe holds less than 0.2 % of global PV panel production capacities. The upcoming [anti-coercion instrument](#) will seek to better shield EU policy mechanisms from such external pressure, and could help avoid the undermining of protection measures against unfair foreign industrial practices in the future.

### Europe's solar conundrum

In Europe and elsewhere, solar installation companies have over time come to rely on cheap equipment [imported](#) from China, and other Asian countries, including South-Korea Malaysia and Vietnam. Without such cheap equipment, solar PV installations – and therefore the implementation of green transition plans – could not advance at the pace they have. However, the Covid-19 crisis has shown that the EU is vulnerable to disruptions of international value chains. The war in Ukraine is another harsh reminder that energy and geopolitics are inseparable. A decade after the EU failed to protect its solar manufacturing industry from Chinese dumping and subsidies, global dependence on Chinese solar equipment has belatedly become a cause for concern.

A larger European PV manufacturing industry has the potential to provide lucrative employment and advance technological leadership. More importantly, in-house PV manufacturing would make the solar sector a source of energy security, allowing the EU to cut the unwanted dependencies that accompany imported oil and gas, particularly from Russia in the face of the ongoing aggression against Ukraine. With Europe importing 80 % of its solar panels from China, dependencies would merely shift from imported oil or gas to imported solar equipment, leaving much to be desired when it comes to the solar sector as a genuine source of [energy security](#) and strategic autonomy.



A [letter](#) signed by ministers from Austria, Estonia, Greece, Latvia, Lithuania, Luxembourg, Poland and Spain called on the European Commission to consider solar PV to be a strategic value chain and provide it with more support under Covid-19 recovery packages. On the same basis, various stakeholders have urged the EU to reinforce European solar energy capacities. In May 2020, [90 organisations](#) from the European solar sector also urged for solar PV manufacturing and research and development (R&D) to be at the core of the Green Deal. As part of the [REPowerEU](#) initiative, the Commission proposed a solar strategy that doubles solar PV capacity by 2025 and installs 600 gigawatts by 2030. Coupled with a proposed solar rooftop initiative – a legal obligation to install solar panels on all new public and commercial buildings after 2025 and residential buildings after 2029 – the demand for solar panels will inevitably shoot up.

With pleas to re-shore PV manufacturing capacities to Europe, the question remains how the Commission will go about providing its domestic manufacturers with a competitive business environment without igniting another round of solar trade disputes. This will require the navigation of domestic and international pressures and finding the right balance between the green transition and reinforcing Europe's supply chain and energy security. Moreover, with energy prices rising steeply, the affordability of solar energy from European manufacturers is an additional challenge for the EU's energy policy. The [US's pending decision](#) on solar-energy tariffs that pits its goal of combating climate change against its ambition to wrestle high tech manufacturing supply chains from China vividly illustrates this dilemma. As in the US, how to promote EU-manufactured solar panels while keeping the green transition affordable is a real conundrum.

## Increasing the EU's capacity to act on solar energy

The Parliament and Commission could mitigate Europe's solar dependence on China in the following ways:

**1. Monitoring the supply chain:** The [new industrial strategy for Europe](#), adopted in March 2020, and updated again in 2021, announced the creation of an [Industrial Forum](#), which supports the Commission in its analysis of industrial ecosystems and their capacity in supporting the twin digital and green transitions. Task Force 3 focuses on analysing strategic dependencies, and the Parliamentary committees responsible for industry (ITRE) and international trade (INTA) could invite them to present in-depth results. Their work could help in identifying energy partnerships with countries that share compatible production capabilities and quality standards; the US, Taiwan, Malaysia, India and Japan provide cases worth examining. Parliament legislators could support the announcement by the Commission of a legislative proposal (as part of [REPowerEU](#)) that intensifies work on the supply of raw materials critical to the production of solar panels.

**2. Steer strategic discussions on the trade-off between strategic autonomy and the Green Deal:** Regular exchanges of views could be held between the Parliament and relevant Commissioners to discuss the trade-off between ensuring a more autonomous supply of renewable energy technologies and the [Green Deal](#)'s dependence on cheap solar equipment imported from China and silicon inputs from Xinjiang. The Commission would ideally take a clear stance in this trade-off, to avoid creating unclear signals for investors.

**3. Encourage access to international investors and R&D institutes:** At European level, PV manufacturing companies have already joined forces with Europe's leading R&D institutes to develop state-of-the-art solar technologies. Now, the EU needs to ensure that European PV manufacturers also have access to international R&D institutes as well as investors. Here, the [International Solar Alliance](#), spearheaded by India and France, could be extremely important in advancing technology transfer, and finding appropriate funding sources for R&D in addition to multiannual financial framework instruments such as Horizon Europe. It will be hard for PV manufacturing companies in the EU or elsewhere to catch up with China in this generation of solar PV technologies (i.e. crystalline silicon PV, accounting for **90 %** of all installed solar panels globally). However, European, Japanese and US companies are still on a relatively equal footing with China for R&D in [next generation solar technologies](#), including perovskite and organic PV. [Oxford Photovoltaics](#), for instance, set a record conversion efficiency by combining perovskite with conventional silicon. Given that these solar technologies are largely still in the ['lab' stage](#), scope remains for European companies to enter the market. To make solar a source of EU energy security, Europe should swiftly commercialise them.