



Thin-Film Solar Industry Association (PVthin) a.i.s.b.l.

PVthin: Our recommendations for the EU Solar Strategy

The International Thin-Film Solar Industry Association (PVthin) welcomes the opportunity to comment on the European Commission's plans to develop an EU Strategy for Solar Energy. Solar PV is at the heart of the energy transition and the fight against climate change. The International Energy Agency estimates that, in order to achieve climate neutrality, solar and wind will need to generate 70% of all electricity worldwide by 2050¹. The upcoming Solar Strategy provides an opportunity for the Commission to take meaningful action to rebuild EU competitiveness in the solar sector, strengthen supply chain resilience and access to PV components, promote high environmental and social sustainability requirements for PV products on the EU market, and leverage demand-side measures to accelerate deployment of these products.

Key challenges to be addressed by the Strategy

1. Heavy dependencies impact the availability of key technologies

EU dependencies in the solar PV supply chain are well documented, including in the Commission's 2020 *Foresight Study on Critical Raw Materials for Strategic Technologies and Sectors*². The report notes that "China dominates nearly all aspects of solar PV manufacturing and use" and that "the most vulnerable step along the supply chain of PV technology is at the component level, for which China dominates the supply market with about 89%." The heavy concentration of PV manufacturing outside of Europe has created dependencies which have the potential to severely impact the EU's ability to access critical technologies to support its decarbonisation objectives. The recent Russian aggression in Ukraine and the resulting response through REPowerEU have clearly shown the need to address heavy energy dependencies on third countries whose values and objectives are not always aligned with the EU's.

Recent freight cost volatility caused by the COVID pandemic, has shown how vulnerable the EU solar industry is to the disruption of supply chains in Asia, and to increased shipping costs. At the beginning of 2022, average global freight rates were 140% higher than at the same time in 2021³. Pressure on freight is exacerbated by continuous lockdowns at Chinese port cities mandated by the government as part of its "Zero Covid-19" policy. Because of the solar sector's current dependence on Chinese components, volatile freight rates and shipping delays translate into risk and volatility for developers when it comes to managing their costs, component availability, and penalties if they are delayed in building planned PV installations. This can cause PV projects in Europe to be delayed or cancelled, undermining the EU's ability to roll out new renewable energy infrastructure.

¹ <https://www.iea.org/reports/net-zero-by-2050>

² https://rmis.jrc.ec.europa.eu/uploads/CRMs_for_Strategic_Technologies_and_Sectors_in_the_EU_2020.pdf

³ <https://www.freightos.com/freight-resources/coronavirus-updates/>



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Excessive manufacturing concentration in a single country outside of the EU means, means the global availability of critical materials or components can be subject to political decisions and geopolitical whims. A recent example is the joint letter issued in September 2021 by leading Chinese PV manufacturers asking developers to delay PV projects in order to accommodate rising materials and logistics costs incurred by the manufacturers⁴. The letter came shortly after the Chinese government ordered Chinese silicon metal refineries to temporarily close operations amid a national power crisis. In these situations, developers in Europe are left vulnerable to orders being cancelled or subjected to extreme delays, with limited means for contractual redress.

2. Concerns around social and environmental sustainability

A second set of issues relates to the social and environmental sustainability of PV components used to support the EU's climate ambitions. From a human rights and due diligence perspective, a number of credible reports have identified serious problems around exposure to forced labour, in particular linked to polysilicon manufacturing and processing outside of the EU⁵. 95% of solar panels today rely on solar-grade polysilicon. The rollout of renewable energy technology can never come at the expense of human rights. Any exposure to forced labour is unacceptable and must be addressed head on. In 2021, G7 leaders in Cornwall expressed concern at state-sponsored forced labour in the solar sector and committed to eradicate the use of all forms of forced labour in global supply chains⁶. A number of major jurisdictions, including the US, have already taken action to address this issue.

When it comes to environmental sustainability, as the rollout of renewable energy infrastructure increases in pace, it will be important to account for the environmental impacts arising from the production of its key enabling technologies. The solar PV market illustrates this well: Thin-film PV modules carry less than half the carbon footprint (300 vs 785 gCO₂eq / Wp) and a water footprint three times lower (7 vs 22 litres / Wp) compared to average modules. By 2050 there will be 60 million tons of PV waste, therefore support to technologies capable of achieving higher recycling rates is a must. Thin-film PV processes recover over 90% material from end-of-life modules (including more than 90% of semiconductor material). More should be done to promote the purchasing of PV technologies that achieve high levels of environmental and human rights sustainability. At the same time, as regulatory frameworks increasingly place a premium on the sustainability of PV modules and components, there is a need to ensure the reliability of environmental claims made by manufacturers, particularly when manufacturing takes place in regions where proper auditing and enforcement may not be possible.

⁴ <https://www.pv-tech.org/solar-manufacturing-majors-call-on-customers-to-delay-projects-amidst-supply-crisis/>

⁵ For a detailed overview, see the report "In Broad Daylight: Uyghur Forced Labour and Global Solar Supply Chains" by Sheffield Hallam University: <https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/in-broad-daylight>

⁶ <https://www.consilium.europa.eu/media/50361/carbis-bay-g7-summit-communique.pdf>



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3. *Intellectual property protection*

Whereas manufacturers in China are predominantly focused on crystalline silicon (c-Si) technologies, the EU can build a strategic advantage when it comes to alternative and more performant module technologies. This includes thin film modules and innovations such as tandem technologies. Gaining and maintaining a strategic advantage in these technologies requires strong IP protection and enforcement. There have been examples demonstrating the presence of structural issues in this area of the solar PV market⁷. EU regulators have the opportunity to define a comprehensive approach to protect IP in the PV sector and move beyond ad-hoc responses to individual cases of IP infringement.

Policy recommendations

Strengthening PV supply chain resilience requires a significant increase in the production of PV modules and components. This production must be diversified geographically, to avoid situations where issues in one region can impact the deployment of PV installations worldwide. Fair competition among economic regions is necessary to drive capacity expansions and technology innovations. If PV manufacturing further consolidates in one market, competition will suffer and innovations will slow.

As a result, PVthin encourages the EU to put forward the following policies as part of the upcoming EU Solar Strategy:

- 1. Create the right conditions to rebuild EU solar manufacturing based on a level playing field internationally.** Eight out of the ten largest global solar panel manufacturers are Chinese-owned⁸. China's investments in PV production began in the 1990s and grew exponentially after 2008, through a mix of state-sponsored subsidies reserved for domestic manufacturers. These subsidies cover, among others, access to land, energy, labour, and finance. To support domestic PV manufacturers, the EU should put in place a package of incentives to help level the international playing field. The EU could draw inspiration from measures being implemented in other geographies, such as the United States. These include tax credits to the solar manufacturing industry incentivising domestic production at every stage of the supply chain, investment tax credits for solar installations, strategic use of public procurement and measures to counteract unfair commercial practices abroad.
- 2. Implement demand-side measures to promote the most sustainable solar technologies.** The Commission is currently working to define Ecodesign and Energy Labelling requirements for PV modules and inverters. PVthin strongly supports these efforts, which are critical to establish a harmonised set of sustainability requirements for the PV sector at EU level. More should be done, for example on green public procurement, as well as on the inclusion of

⁷ <https://www.q-cells.eu/about-q-cells/press-releases/20211103.html>

⁸ <https://news.energysage.com/best-solar-panel-manufacturers-usa/>



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sustainability criteria (e.g., CO₂ footprint) in Member State support schemes under the Renewable Energy Directive. Whereas additional grading criteria are allowed up to 30% under the most recent EU guidelines on state aid for environmental protection and energy, only some Member States (e.g., France) explicitly place a value on carbon footprint as part of their auction schemes.

- 3. In line with commitments made at the G7 in Cornwall, restrict market access for PV components made with forced labour.** President Ursula von der Leyen has announced⁹ that the Commission is preparing a new legislative instrument to effectively ban products made by forced labour from entering the EU market. PVthin [strongly supports](#) this commitment. An import ban or equivalent import control mechanism would maximise legal certainty for the solar industry and support frontrunners who are able to document the absence of forced labour in their supply chains. A targeted import ban will also be complementary to the European Commission's new proposal for a Directive on corporate sustainability due diligence¹⁰ which aims to foster sustainable and responsible corporate behaviour throughout global value chains and places more stringent due diligence obligations on companies operating within the EU.

About PVthin

PVthin - the International Thin-Film Solar Industry Association - is an international, not-for-profit coalition representing global leaders in the Thin-Film Solar Industry and broader value chain based on chalcogenide, perovskite, tandem and/or heterojunction PV technologies, and any other thin-film or emerging PV technology. For further information about our position on the EU Solar Energy Strategy, please contact us at Secretariat@pvthin.org.

⁹ https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1187

¹⁰ https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1145