

Joint Recommendations for Action

Sustainable Solar PV Manufacturing in Europe

In the wake of current global crises, the expansion of renewable energy is more imperative than ever. Solar photovoltaic (PV) technology plays a key role in this context: Worldwide PV manufacturing will inevitably have to multiply. In Europe alone, the number of installed PV systems is expected to rise from about 160 gigawatts (GW) in 2021 to over 8,000 GW in 2050, depending on the scenario.

However, a ramp-up of PV manufacturing bears a high demand on resources, people and nature. It also threatens to further exacerbate Europe's already extremely high dependency on China. The People's Republic of China specializes in the manufacturing of PV modules and controls over 80 per cent of the global PV supply chain. It is accused of significant human rights violations.

In order to break away from these dependencies without jeopardizing PV expansion in Europe, it is necessary to establish European PV manufacturing across all segments of the value chain. Within the framework of a just energy transition, the ramp-up of PV manufacturing in Europe must be designed in an environmentally and socially just way. Germany's "Solar Valley" could hereby serve as a model region for environmentally friendly PV manufacturing and transparent supply chains.

Yet, at present, there is no sign of a comprehensive re-development of the PV industry in Europe. This should be put on the political agenda immediately, if the European PV industry does not want to fall further behind in competition with other countries. A massive industry shift away from Europe towards overseas is already noticeable as India and the USA offer particularly attractive subsidy conditions under their local content strategies.

To accomplish the project of a fair and environmentally sound energy transition in Europe, both the EU and Germany must urgently respond with appropriate measures that put in place a suitable

political framework for sustainable PV manufacturing across all segments of the value chain.

Europe must quickly upscale environmentally and socially responsible PV manufacturing capacities.

In Europe, sustainable production of polysilicon, ingots, wafers, cells and modules of at least 600 GW each has to be launched immediately. Safeguarding human rights and environmental protection in the associated supply chains is a top priority. To ensure the appropriate supply of raw materials, machinery, equipment, components and trained labor, we demand:

- 1. Effective subsidies for European PV manufacturing:** In Europe, high-performance PV manufacturing must be ensured by expanding polysilicon production as well as the manufacturing of ingot, wafer, cell and modules. Therefore, effective subsidies and long-lasting investment funds have to be made available in the short term.
- 2. High environmental and human rights standards along the value chain:** Ambitious standards and effective due diligence along the entire PV supply and value chain must be enforced at the EU level in order to protect people and the environment in the global operations of European companies.
- 3. Strengthening circular economy by ramping up PV reuse and PV recycling:** A European solar strategy must consider the end-of-life of PV products from the outset and establish uniform policy requirements regarding maintenance, reuse and raw material recycling.

Quickly upscale sustainable PV manufacturing capacities in Europe

With RePowerEU and the EU Solar Strategy, the European Commission has already sent important signals to build resilient European PV supply chains. In a next step, these undertakings must now be underpinned with attractive support packages worth billions.

As a fast-acting measure, additional investment funds for PV manufacturing located in Europe need to be mobilized swiftly. The funding opportunities in the **EU Chips Act** may serve as a best-practice example. In addition, state **subsidy programs for businesses with low equity capital, a special depreciation on PV production facilities as well as a time-limited compensation of operating costs in times of high energy prices** should be considered. Furthermore, competition-distorting **import fees** for imported components of European PV module manufacturers must be adjusted immediately. The PV value chain must also play a vital part in the anticipated **Critical Raw Materials Act**.

With the expansion target of 215 GW PV by 2030, **Germany must be a pioneer** of this new PV industry policy and advocate for corresponding funding instruments both nationally and at the EU level. This requires interdepartmental coordination in the form of a **special representative for the manufacturing of renewable energies in Germany**.

Enforcing ambitious human rights and environmental standards along the supply chain

Fair competition within and outside the EU must be based on transparency and the protection of human rights and the environment. This is not just applicable to PV supply chains; these should be the underlying principles of all EU trading activities. Accordingly, imports of products produced with forced labor have to be banned immediately.

An **effective, loophole-free EU supply chain law** must ensure full monitoring and prevention of relevant risks across the entire value chain. It must stipulate human rights, environmental and climate due diligence obligations and guarantee their implementation through effective monitoring and sanctions. **The German Supply Chain Duty of Care Act** must also be revised and improved accordingly.

Purchase guarantees for socially and environmentally responsible PV products by the public sector and **accordingly adapted tendering criteria** can ensure planning security and a market for high quality products. In addition, there is a need for the prompt introduction of the Carbon Border Adjustment Mechanism.

Considering the entire life cycle of PV products right from the start

The basis for a functioning circular economy for PV systems is the **consumer-friendly and reliable collection** of used modules. This must be provided for and further improved by specifications at national and European level. In addition, further **development of recycling requirements** and higher standards for the **recovery of valuable or critical raw materials** such as metals and silicon are needed. Improvements in the reparability and recyclability of PV products should be incentivized by rapidly implementing the planned **European Ecodesign Regulation**.

Research and development will further optimize the eco-balance of PV. In order to ensure long-term and continuous funding for this, innovations along the solar value chain should be secured by addressing them as an **Important Project of Common European Interest (IPCEI)**.

Launching an acceleration package for sustainable energy supply

As signatories of this cross-sector alliance, we are committed to the development of sustainable European PV manufacturing in the multi-digit gigawatt range. We call on all political decision-makers to do their utmost for its realization.

Origin of the paper

In 2022, Deutsche Umwelthilfe (DUH) launched a three-part workshop series titled "Solar For a Better Future" to identify possible solutions for a sustainable and socially just energy transition based on photovoltaics in times of crisis. Topics discussed by key players in science, industry and civil society were the PV supply chain, environmental impacts of PV manufacturing, PV recycling and responsible competition. The aim of workshop series was to raise awareness of the problems in PV manufacturing and identify practical and quickly implementable solutions. The present recommendations for action are the result of this process.

Signatories (as of February 2023)



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