

FRAUNHOFER GREEN DEAL SERIES – IMPULSE

»The Photovoltaics Renaissance«

In a nutshell:

- The full potential of European PV technology as primary source of sustainable energy remains untapped due to the lack of PV production in Europe.
- The European solar ecosystem requires strategic support by member states and the EU to reestablish Europe's leadership and strategic autonomy in the PV industry.
- Fraunhofer leads European research and development efforts in PV technology and is ready to deliver its fair share on installing PV as a main pillar of the EU's climate goals.

With the Green Deal, Europe embarks on the journey to become the first climate-neutral continent. To achieve this ambitious goal, an ecosystem for renewable energy sources needs to be further developed, implemented and exploited. This will serve as a unique opportunity to create qualified and local jobs, support EU businesses against the global competition, and manifest Europe's industrial leadership in innovation and clean energy technologies. Photovoltaic (PV) is a key technology to solve the challenges arising from climate change and enable Europe's energy security. Europe is world leading in PV R&D, the cost of solar electricity has decreased significantly, and the number of installations is expected to increase sharply in the coming years. The market conditions offer great opportunities, but their full potential remains untapped, as there is very limited production of PV in the EU.

Amongst many other benefits, we could save almost 50% of greenhouse gas emissions if we produce along the complete PV value chain in Europe instead of China at the same cost.

Ralf Preu, Director PV - Production Technology, Fraunhofer Institute for Solar Energy Systems ISE

In the past two decades, and even more so in the last five years, it has become obvious that sustainable energy production will largely rely on solar power and is expected to replace the currently dominant energy suppliers oil and gas as a prime source of power by 2050.

As Fraunhofer ISE Director Andreas Bett announced during our 3rd Fraunhofer Green Deal Series, photovoltaics will be the pillar for carbon free energy supply. However, to realize a 100% renewables system in Europe, we need a "Photovoltaics Renaissance". Our experts from the [Fraunhofer Institute for Solar Energy Systems ISE](#), the largest European solar research institute, outlined how the European Union can make this compelling vision become a reality.

European solar institutes and production sites are leading in innovative solar technology (e.g., [Tandem Photovoltaics](#)) and have the infrastructure to ramp up their capacities manyfold. Expenses for the installation of PV systems have fallen by 85% in the last decade and a square meter of PV cells costs almost as little as a steel sheet of the same size. Solar energy must be local and sustainable, yet globally competitive. There is a clear need to shift Europe's approach towards a circular and customized mass production of essential PV technologies in Europe. To deliver on this demand, the Fraunhofer ISE has aligned its research and innovation activities with other European organizations like Solar Power Europe and Solar Europe Now. They propose large scale collaborative projects, like the [10GWGreenFab](#) and are ready to tackle the challenges of the climate crisis, given sufficient support by the EU and member states. For that purpose and as Michael Bloss (MEP), the patron of this webinar, highlighted,

an industrial strategy targeting solar energy, similar to the already existing plans for [offshore wind energy and hydrogen](#), is key. Thus, we can restore PV production in Europe, which we need as strategic technology for the future.

Concerning the actual installation of PV, the main issue is space, as PV competes with other land uses like residential buildings or agriculture. To account for the Green Deal target of around 40% renewable energy coverage by 2030, a space approximately half the size of the Netherlands would be needed to cover the projected energy demands of the EU. To solve this issue, the Fraunhofer ISE highlights the potential of [Integrated Photovoltaics](#). The main goal is to develop and advance technologies that occupy already used land, thus additionally counter effects of climate change, and support other sustainable energy systems, such as electric vehicles. With the largest potential in Agrivoltaics and Building-integrated Photovoltaics, integrated PV is expected to be capable of accounting for the Green Deal's goals.

To realize the opportunities of solar energy in Europe, Fraunhofer experts will continue to **share their knowledge and bring efforts together to spark innovations for our future as a climate-neutral and sustainable continent.**